
REPORT OF THE MYSORE AGRICULTURAL DEPARTMENT
FOR THE YEAR ENDING 30TH JUNE 1927

WITH THE GOVERNMENT REVIEW THEREON.

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Government of his highness the Maharaja of Mysore.

GENERAL AND REVENUE DEPARTMENTS.

G. O. No. D. 5778-98—A. & E. 122-35-5, dated 20th March 1936.

Administration Report of the Agricultural Department.

Reviews the ----- for the year 1934-35.

READ—

Letter No. Roc. 281-Hc. 131—35-36, dated 30th November 1935, from the Director of Agriculture, forwarding the annual Administration Report of his Department for the year 1934-35.

ORDER No. D. 5778-98—A. & E. 122-35-5, DATED BANGALORE,
THE 20TH MARCH 1936.

Recorded.

Mr. A. K. Yegnanarayana Iyer was in charge of the Department till 4th January 1935, when he went on leave preparatory to retirement. Dr. B. Narasimha Iyengar succeeded him and held the charge during the rest of the year.

Chemical Section.—Experiments on the more important local crops, such as paddy, sugar-cane, ragi, jola, cotton, coffee and arecanut were continued. Experiments were conducted on ragi and doddahatti cotton for determining the rate of assimilation of different plant foods and other details and on coffee, to find out the soil reaction and the influence of essential plant foods in various parts of the plant on the setting of the blossom and growth of the berry. The use of indigenous plant substances as insecticides is being investigated under a scheme financed by the Imperial Council of Agricultural Research.

Mycology Section.—Nearly 12,000 acres of areca were sprayed against koleroga and sprayers and chemicals of the value of about Rs. 23,000 were sold. Groundnut oil is successfully replacing casein in the Bordeaux Mixture. Experiments are in progress to find out the effectiveness of molasses of the Mandya Sugar Factory as a spreader in spraying. Demonstrations were also held to fight against insects attacking stored grains. Control measures against diseases peculiar to ragi, potatoes, peas, apples and tobacco were in progress and work was started against a new disease of cardamom. Biological control of green bug on coffee was tried as it was complained that large scale spraying against leaf disease was detrimental to the spread of the white fungus which parasitises the green bug. A disease of plantains which was found to be widespread in the Mysore and Tumkur Districts, was investigated and over 2,000 plants are reported to have been successfully treated.

Entomology Section.—Special attention was paid by this section to the control of the sugar cane borer in the Irwin Canal area where this disease is largely prevalent. One of the methods tried was the release in cane fields of the natural enemies of the borer egg masses. The results were successful and a parasite rearing laboratory was opened at Mandya for large scale production of these natural enemies. Other methods, such as catching of moths by trash heaps, removal of dead hearts, light earthing up of young cane were demonstrated to raiyats and are becoming popular. Remedial measures extended to other pests, such as avare pod borer, potato beetle, the red-haired caterpillar attacking early sown crops, betel-vine earth worms and root grubs of sugar cane and arecanut. Bee-keeping is becoming popular owing to propaganda and the holding of short summer courses. This is a promising line of activity and Government will be glad to consider proposals for extending it.

Botany Section.—Selection and hybridisation work to produce new strains and varieties of crops was continued on all the departmental farms. People around Hebbal are being induced to grow H. 22 ragi and keep it pure in order to develop it into a good seed production centre. Seed work on paddy was confined to Nagarahalli and Marthur Farms, where several varieties of paddy were under trial.

No. D. 5778-98—A. & E. 122-35-5, DATED 20TH MARCH 1936.

or observation. The Hebbal and Irwin Canal Farms continued the work on sugarcane. X-ray work on cane subsidised by the Imperial Council of Agricultural Research was continued on the Hebbal Farm and the results yielded by Pattapatti and H. M. 544 are promising. Seventeen spreading and thirteen erect varieties of groundnut were tried; the local Sogatur variety maintained the lead.

Work on cotton is being continued mainly on the Babbur Farm. Investigation of the Red Leaf Blight has been started from funds given by the Indian Central Cotton Committee.

In connection with the scheme for the expansion of tobacco cultivation in the State, several tests were made on different varieties of tobacco, including Harrison special and other exotics.

Agricultural Engineering.—Forty-six new implements were made and supplied to the Agricultural Departments of Hyderabad and Madras. Bee-keeping appliances also were manufactured. A light six shovel cultivator costing half as much as the Kolar Mission plough but equally efficient was made and sold through the Central Implement Depot. The total value of implements sold during the year was Rs. 24,622 as against Rs. 37,000 in the previous year.

Experimental Farms.—The work on the farms continued on the usual lines. A large number of seedlings of fruits were distributed from the Babbur Farm in accordance with the policy of Government to develop fruit cultivation under the Vani Vilas Sagar. The working plan of the farm is being modified so as to suit the system of intermittent irrigation adopted in connection with this reservoir.

The results of the work done on sugar cane in the Irwin Canal Farm at Maudya have been gratifying. Increasing attention is being devoted to other crops, such as tobacco and plantains.

Demonstration and Propaganda.—Unfavourable seasonal conditions restricted the work in the districts. Special attention was however paid during the year to the cultivation of bilijola to tide over the fodder scarcity particularly in the Tumkur and Kolar Districts. New and better varieties of seed, improved implements and artificial manures as also sprayers and chemicals were supplied to agriculturists. Work through Co-operative Societies and local bodies was not very satisfactory owing to adverse seasonal conditions.

The Director is requested to note in the annual reports in future, the number of demonstration plots in each circle and the area under improved seed recommended or introduced by the Department.

Agricultural Education.—Sixteen candidates passed out of the Hebbal Agricultural School and one of them with distinction. There was a fall in the number of applicants for admission to the school due perhaps to the standard of qualification for entrance having been raised to F.C.P.S. of the S.S.L.C. Examination or its equivalent. The vernacular schools at Chikkanhalli, Ramakrishnapur and Hassan were also popular. The Hassan school continued to be managed by the District Board.

The Department took part in the Dasara Exhibition at Mysore and the demonstration plots attracted a large number of visitors. The Agricultural and Experimental Union continued to issue the Journal both in English and Kannada.

The working of the Department was on the whole fairly satisfactory.

M. VENKATESA IYENGAR,
Secretary to Government,
General Department.

To—The Director of Agriculture in Mysore.
The Revenue Commissioner in Mysore.
The Director of Industries and Commerce in Mysore.
The Registrar of Co-operative Societies in Mysore.
The Comptroller to the Government of Mysore.
The Chief Engineer of Mysore.
The Deputy Commissioners of Districts.
The Presidents of District Boards through the Deputy Commissioners.

REPORT OF THE MYSORE AGRICULTURAL DEPARTMENT FOR THE YEAR ENDING 30TH JUNE 1935.

PART I.

Mr. A. K. Yegnanarayana Iyer, M.A., Dip. in Agri. (Cantab.) N.D.D. (Eng.), was in charge of the Department till 4th January 1935 when he went on leave preparatory to retirement. I was appointed to act for him from that date and confirmed in the appointment from 4th March 1935.

SEASONAL CONDITIONS.

On the whole, the seasonal conditions were not favourable for normal growth of crops. The rainfall was neither sufficient nor timely in many parts of the State. As a consequence, there was fodder distress in portions of almost all Districts. As a result of severe scarcity of fodder, cattle mortality increased to a certain extent. The bili jola campaign undertaken to enable raiyats to grow fodder at least taking advantage of late rains was a great success in spite of certain drawbacks due to a sudden demand for the supply of very large quantities of seeds.

The price of agricultural produce was not very favourable to producers to fulfil their financial obligations, and reduced their purchasing power also greatly. This has naturally affected the work of the Department in respect of the sale of implements, manures and other articles.

SCIENTIFIC SECTIONS.

The Chemical Section continued, during the year, experiments already laid out on the different Farms on the more important crops of the State such as paddy, sugarcane, ragi, jola, cotton, coffee and arecanut. Pot experiments were conducted to find out the rate of assimilation of different plant foods by ragi and influence of differential and periodical manurial treatment on the yield of crop. Similar experiments were conducted with cotton (Doddahatti) to find out if any relation existed between nutrition and Red Leaf Blight disease. Experiments on coffee to find out the soil reaction—acid, neutral or alkaline—at which coffee grows best, are also in progress.

Analyses of portions of the coffee bush from the time of blossoming to formation of the ripe berry were undertaken to find out the distribution of essential plant foods in various parts of the plant and their influence on the setting of the blossom and development of the berry.

In co-operation with the Entomological Section and with a grant by the Imperial Council of Agricultural Research, investigations on the use of indigenous plant substances as insecticides were continued.

Except the fact that sugarcane under certain conditions responded very well to a liberal application of sulphate of ammonia up to 10 cwts. per acre, there is nothing very remarkable to report under field experiments. Results obtained during the year have only confirmed previous year's work and it only remains to publish them all in a connected form and plan out further experiments with new crops such as tobacco and with new manures as well.

Pot experiments on ragi and cotton on the lines indicated have only gone on for one season, and results are not capable of being discussed. One indication with regard to cotton may be said to be that a well nourished plant is more resistant to disease than a weakling, and that a deficiency of nitrogen seems to predispose the cotton plant to Red Leaf Blight. Work on coffee has confirmed previous work that coffee thrives best on a fairly neutral soil with a PH value ranging between 6.5 and 7.5. A note in this connection is under preparation for being published in the Planters' Chronicle.

As for work on insecticides, hongey oil resin soap continues to attract attention, and is successfully replacing fish oil resin soap. Investigations on a new plant substance—*Tephrosia candida*—was started and isolation of the pure insecticides in it

is nearing completion. It is interesting to note that the insecticidal activity of this new material is fairly extensive against all kinds of plant pests. Work on *Mundulia suberosa* was temporarily suspended as its insecticidal properties were found to be of a very limited nature.

Examination of over 100 samples of soils from coffee estates was made with reference to their lime requirements. The Section continued to supervise the manufacture of compost at Mysore, and analysed the finished product for its manurial value.

The Mycological Section continued its useful work on the spraying of areca in the Malnad against Koleroga, and nearly 12,000 acres were sprayed during the year. The total transactions relating to the supply of sprayers and chemicals in this connection amounted to about Rs. 23,000.

Groundnut oil was used as a spreader of Bordeaux mixture on a fairly large scale. It has stood the rains as well as casein Bordeaux and has checked the disease also equally well. Molasses from the Mandya Sugar Factory is also under trial as a spreader. Its addition seems to improve the physical character of the mixture also. Besides, it reduces the cost of spray mixture also appreciably. If successful, the purchase of casein, etc., which is now being done to the extent of Rs. 40,000 annually may be dispensed with.

Investigations on Anabe Roga of arecanut and cocoanut are making a very slow progress. The best and safest method that can be recommended under present conditions is the removal and destruction of diseased material and isolation of these centres of infection.

A fairly wide-spread disease of plantains was noticed in Mysore and Tumkur Districts. Among various treatments tried, Bordeaux paste was found to be useful and effective. Over 2,000 plants have thus been treated successfully.

As a remedy against certain diseases of ragi—*Helminthosporium* and Benkiroga—treating the seed with certain proprietary fungicides was tried and found to be useful. Large scale control measures have been taken up on a new virulent disease of potatoes, and arrangements made for an organised campaign. Remedial measures against diseases of peas, apples and tobacco are being popularised and work has been taken up on a new disease of cardamoms in Saklespur.

Experiments were carried out on the biological control of green bug on coffee as it was complained that large scale spraying of coffee against leaf disease proved detrimental to the spread of the white fungus which parasitises the green bug. Artificial spread of the fungus was tried and found effective. It is also reported that fungus cultures sent from Mysore to the Island of Seychelles effectively controlled the pest there.

The teliospore stage of the coffee leaf disease fungus was found to occur in abundance on coffee in Bangalore as well as on diseased material from coffee estates. The formation of the spores was noted to occur all through the year except from June to September. The possibility of the occurrence in nature of the aecial stage is under study.

The Entomological Section devoted its particular attention to sugarcane borer control work in the Irwin Canal area. Owing to planting of cane almost throughout the year, this item of work has become very important. One of the methods tried was the release in cane fields of the natural enemies of the borer egg masses. These were reared out in large numbers in the laboratory at Bangalore. The results were so encouraging that a parasite rearing laboratory for a large scale production of these natural enemies was started in Mandya. Demonstration of other methods of borer control, such as catching of moths by trash heaps, removal of dead hearts and light earthing up of young cane were demonstrated to raiyats and are becoming popular.

Remedial measures for the control of avare pod borers, the potato beetle, the red haired caterpillar attacking early sown crops, betel-vine earthworms and root grubs of sugarcane and arecanut were demonstrated and the pests brought fairly under control.

Experimental measures to control coffee borer, and shot-hole borer are under trial, and results obtained seem to be promising. Extensive observations have shown that the most destructive coffee berry-borer beetle of Java has not established itself on coffee here till now.

A serious outbreak of plantain disease in the Mysore District was investigated. It was proved to be due to fungi, but in most cases, a weevil was also found associated with the disease. Investigations are in progress to find out whether insects are the

primary cause of the fungus attack. In newly planted gardens, the insect is always introduced by means of suckers brought in from other places. Soaking of the suckers in cold water for three or four days before planting was found to kill all insect life in them.

Another important and useful item of work was in connection with bee-keeping. Owing to propaganda and holding of short summer courses in bee-keeping, the public are showing increased interest in the subject. For want of adequate staff, it has not been found possible to expand the work or satisfactorily look after the large number of hives that have already been distributed. For want of funds only 18 improved hives with bees have been distributed during the year.

Work on the trial of fish poisons and other indigenous vegetable products as insecticides is being done in co-operation with the Chemical Section. Evaluation of the insecticidal properties of 11 local plants has been made. Some of the various plant products tried till now have not been found to be stable, the toxicity being found to decrease with age.

The Botanical Section continued its normal work of producing new strains and varieties of crops by selection as well as hybridisation. The work is not confined to one locality, but is distributed over all the Farms of the Department.

The season was not a favourable one for the Ragi crop. Though work was continued in Hebbal, Hunsur and Marthur Farms with reference to varieties suited to these particular tracts, there is nothing very important to report upon. Efforts are being made to induce people round about the Hebbal Farm to grow H.22 ragi on a large scale and keep it pure so that it may form an important centre of good seed production.

Seed work on paddy is confined to Nagenahalli and Marthur Farms. 45 selections were tested out on the Nagenahalli Paddy Station. As a result, 17 have been retained for further trials and 32 new ones taken up for critical observation. 34 selections gave an yield of over 2,000 lbs. or nearly 11 pallas of grain per acre. A selection from Maharaja Bogam S.657 gave an yield of over 3,000 lbs. or nearly 17 pallas of grain per acre.

Two hundred and forty-two varieties of paddy were under observation during the year. 45 varieties were obtained from Karjat Rice Station of Bombay. Five of them have given higher yields than G.E.B. 24.

The production of new varieties by cross fertilisation has not yet made sufficient progress to be reported upon.

As the Hebbal tank had no water, summer varieties of paddy could not be grown. The demand for seed is very erratic and some arrangement has to be made to grow a certain amount of it at least. As water supply in tanks cannot be depended upon and as continuous irrigation during summer from Vani Vilas Sagara depends on the level of water in the lake, the only place to grow such seed in summer seems to be the Irwin Canal Farm. Arrangements for such work will be made in summer of 1936.

The improvement of Malnad varieties of paddy seems to be a very complicated problem. Varieties are needed to grow both as sown and transplanted crops. G.E.B. 24 which is at present spreading in the malnad also does not seem to be a variety very well suited to the tract. Selections from local paddies have been made and are under trial. Eight of them seem to be promising as they produce both grain and straw in reasonable quantities.

An attempt is being made to study the proportion of rice to paddy in all varieties under trial. Besides, the cooking qualities of rice obtained are also being examined. In addition, the suitability of important varieties for making pop-rice, beaten rice and puff-rice is also being tested.

Work on sugarcane was continued on Hebbal and Irwin Canal Farms. All the exotic canes flowered early as usual resulting in poor vegetative growth with a consequent decrease in tonnage. Even the Coimbatore varieties are not free from the above mentioned drawback. Of the new canes under trial, H.M. 607, H.M. 608 and H.M. 609 have done well. H.M. 608 is a late maturing cane, yields a rich juice and gives an yield of over 40 tons per acre. Besides, it does not show a tendency to flower. Six new varieties of cane have been obtained from Coimbatore and are under trial.

Out of over 700 selections made from seedlings raised between 1932 and 1934, nearly 507 were discarded. A careful selection from the remainder was made and planted out on Hebbal and Irwin Canal Farms. Promising selections for further study have been obtained from P.O.J. 2878, E.K. 28, P.O.J. 2727, P.O.J. 2883, P.O.J. 213, C.O. 281, C.O. 313 and B. 6346.

X-ray work subsidised by the Imperial Council of Agricultural Research was continued on the Hebbal Farm. Local Pattapatti and H.M. 544 striped were used for irradiation, and have yielded over 40 per cent mutants. Single eye-bud setts of Pattapatti cane have produced mutants of several colours, viz., white, red, orange and partial striped. Production of such mutants by X-ray opens up a new line in plant breeding.

Eleven more varieties of cane have been taken up for X-ray work. Besides, the treatment has been extended to horticultural plants, paddy and groundnuts also.

Work on groundnuts was continued on the Hebbal Farm as in previous years. Of the 17 spreading varieties tested, the local Sogatur still maintains the lead. Of 13 erect varieties under trial, H.G. 1 and African Red are very promising. H.G. 1 is already fairly popular in the State. Grown as a summer crop under irrigation in the Irwin Canal area, it has yielded over 40 pallas of pods per acre.

Besides, a large number of strains from Hybrids are also under observation. The small seeded pigmy types are found to be very vigorous in growth and are being multiplied for fodder purposes.

Cotton work is being continued mainly on the Babbur Farm. Species of wild cotton have been obtained from America and Karachi. As they are said to possess only 13 chromosomes just like some of the Asiatic varieties, they will be used for crossing work. N.T. cottons from Punjab, and several varieties from Hyderabad and Coimbatore are also under trial.

Selection 69 still continues to be popular, and H. 190, a new variety, is full of promise. They are now being tried on a bulk scale side by side. Neither of these two is resistant to wilt disease, whereas Jayavant variety introduced from Bombay was found to be least affected by the disease.

H. 190 has given good results but is susceptible to wilt and is spoken of highly by the Mysore Spinning and Weaving mills. Two other strains—Nadam-like 21-22 and Nadam-like 149-152—are promising. These have been given out for preliminary trials to several places in Chitaldrug and Mysore Districts.

Of the selected cottons tested, M.A. II and M.A. IV have given encouraging results. The Red Leaf Blight was evident this year also. The testing of Doddahatti types of cotton under rainfed conditions has been transferred from Babbur to Singapur Kaval Farm, about seven miles from Chitaldrug.

Trial of cotton to find out varieties best suited to the Irwin Canal tract is being done on the Irwin Canal Farm. Due to seasonal conditions, early ripening varieties are not suited to this tract. M.A. II and N.T. 38 seem to suit the area, if sown early in May or June. The yields from these seem to go beyond 1,000 lbs. of seed cotton per acre.

A collection of 81 different varieties of Jola was grown in line cultures on the Babbur Farm. Sixteen promising varieties are being tested for comparative yields.

Selection work on castors and tobacco is being done on the Kar Ragi Station at Hunsur. Potato seedling work is being continued on the Hebbal Farm. Though a good yield of potatoes can be obtained in the Irwin Canal area, the crop does not keep well for seed purposes. Hence, it seems necessary to organise a continuous seed supply from outside, if the crop is to become popular at all in that area. A number of new crops such as oats, safflower, linseed, etc. are being tried on the Irwin Canal Farm to find out their suitability to the newly irrigated tract.

Laboratory work on the study of Red Leaf Blight of cotton has just been started and the scheme is financed by the Indian Central Cotton Committee.

The Engineering Section continued to look after most of the buildings and machinery on the Farms of the Department, prepared plans and estimates to the extent of Rs. 10,000 and got work executed to the extent of over Rs. 8,000.

The work order system was introduced and nearly 450 jobs were carried out. These comprised of repairs to machinery and implements belonging to various sections and the manufacture of new articles needed by the Central Implement Depot and Farms. Forty-six new implements were made and supplied to the Departments of Agriculture of Hyderabad and Madras. Bee-keeping appliances were made and supplied to the Entomological Section.

The designing and testing of new implements is one of the important functions of the Section. A number of locally made plough parts were tested and defects in design and material were pointed out. The new seed drill designed by the Department was further improved to suit it to sow jola also and demonstrated at the Dasara Exhibition.

It is in contemplation to make about 20 such seed drills for popularisation in the Districts. A light six-shovel cultivator doing equally good work as the Kolat Mission one but costing only half as much has been made and supplied for sale through the Central Implement Depot. A cultivator of 13 tynes running on wheels was also made and demonstrated. While the implement is appreciated, the general opinion is in favour of one of smaller dimensions.

The introduction of the mould-board plough during the last 20 years has stimulated local artisans to manufacture them. The attempt seems to be successful. Steps are being taken to find out the possibility of encouraging such manufacture as a rural industry.

Duty of water experiments with paddy were conducted on the Babbur Farm. Exclusive of rainfall during the growing season, monsoon paddy needed about 35 acre-inches of irrigation whereas summer paddy needed over 40 acre-inches. As the irrigation policy of the Vani Vilas Sagar area has recently been changed, these experiments will be discontinued.

The Departmental tractor did some useful work on private lands. It is already too old and worn out and consequently not very efficient. It seems desirable to replace it by one that can be worked with crude oil as fuel.

EXPERIMENTAL FARMS.

The main crops dealt with on the Hebbal Farm are ragi, groundnuts, paddy and sugarcane. The rainfall during the calendar year was 26.67 inches distributed over 59 days as against 36.32 inches distributed over 70 days in the previous year. During the cropping season itself, there was a rainfall of 21.11 inches in 45 days. On the whole, the season was not very favourable to a normal yield of crops.

Rotational experiments with ragi confirmed the results of previous years that ragi grown after groundnut gives a better yield than ragi after ragi. Similarly with experiments on manures for ragi, previous results were confirmed in that sunnhemp was a good green manure and better than cow-pea and that where artificials were used, a mixture of sulphate of ammonia, superphosphate and muriate of potash was the best. The varietal tests were conducted in two groups, using six varieties in each group. H. 22, H. 32 and H. 39 gave higher yields than Hullabele in the first group. H. 22, H. 71 and H. 77 seemed superior to Hullabele in the second group. In sowing tests, four different kinds of seed drills were tested. Sowing by lift drills gave the best yields whereas sowing by country drill gave the highest yield of straw.

Manurial, varietal and bulk trials were conducted with groundnuts. In manurial tests, the highest yield was obtained when complete manure was given along with lime to H.G. 1 variety of groundnuts. Of the five varieties tested, Mauritius and Big Japan gave the highest yields. Bulk trials with seven spreading varieties and two erect varieties were carried out.

On the wet area, manurial trials were conducted with Gunasale paddy. In the series in which organic sources of Nitrogen are used, a combination of honney leaf, castor cake and super gave the highest yield, and in the mineral manure series, a combination of sulphate of ammonia and double dose of superphosphate gave the highest yields.

In varietal tests both in the strip and chess board methods, Gunasale gave the highest yield.

Varietal tests conducted with sugarcane against H.M. 320 as standard showed that H.M. 500 was the best among thick soft canes, H.M. 607 among medium canes and H.M. 608 among the new seedling canes.

Two varieties of cashewnuts, 12 pure collections of Togari, and many varieties of fruit plants are also under trial.

Work on the Marthur Farm was mainly confined as usual to areca, pepper and paddy. The manurial experiments with areca having reached a certain stage as to requirements of the plant, the residual effects are being studied with a view to start fresh experiments as to the frequency of manuring. The local practice is to divide a garden into three parts, and manure only one part every year. The new experiments will be planned out to conform with local practice and find out its relative merits as compared with manuring every year or every two years.

The imported varieties of pepper vines having shown themselves as superior to local ones, they are being popularised. Over 2,000 cuttings of Malabar pepper, and 600 basket layerings of Balamkota and Kalluvalli were distributed from the Farm.

Varietal, manurial and cultural experiments with paddy were continued as before. Though G.E.B. 24 has been fairly popular in the malnad also, attempts are being made to select good strains from local varieties to maintain the requisite yield of straw. One such selection has given an yield of nearly 3,000 lbs. or nearly 17 pallas per acre. The yield from transplanted plots has continued to be better than that from sown plots. In the manurial experiments too, it was found possible to get an yield of nearly 3,000 lbs. per acre by using 80 lbs. sulphate of ammonia and 160 lbs. superphosphate corresponding to 16 lbs. nitrogen and 25 lbs. of phosphoric acid.

The area under sugarcane is not large and the maximum yield has not gone beyond 12 tons per acre.

Of the dry crops on the Farm, ginger is being given an extensive trial. The encouraging results of the first year were not kept up due to unfavourable seasonal conditions, and an attack of fungus disease.

Pine apples, mangoes, and cashewnuts are also under trial on the Farm, and attempts are also being made to find out if Robusta Coffee can be successfully introduced into the area.

Two short courses on areca drying and jaggery boiling were held on the Farm and 92 people attended in all.

BABBUR FARM.

Seasonal conditions on the Babbur Farm were not quite favourable. The total rainfall was only 15.57" against an average of 20.47". Rains were rather too late for the sowing of cotton and just in time for jola. As more than 75 per cent of the rainfall was received before the usual sowing season, it was too scanty for all crops during the growing period.

A report of work done on cotton and jola in the Botanical Section of the Farm has already been summarised in dealing with the work of the Botanical Section. In the Farm Section proper, two improved strains of cotton—S.69 and H.190—were multiplied for seed purposes. The average yield of cotton over an area of 20 acres was only two maunds per acre as against an average of 9.5 maunds in 1933-34.

Sugarcane was the chief crop grown in the wet area. It occupied an area of over 15 acres, and the average yield of cane was 18.6 tons per acre as against 17 tons in 1933-34. Over 2,40,000 setts of cane were distributed as seed material to various centres.

Tobacco was tried on one acre of land, but it was not a success due to too much of rain in October and November.

An area of nine and odd acres was devoted for work with irrigated cottons. Most of the area meant for paddy was leased out to raiyats, and only a small plot devoted to experiments on duty of water was cultivated by Farm labour. Eleven types and selections of paddy were tested against local 'Halubalu' paddy to study the relative yield and period of maturity. The period of maturity inclusive of nursery period varied from 120 to 129 days. The maximum yield was obtained from S. 347 and it took about 125 days to mature.

Small scale experiments on the Vernalisation of seed paddy were carried out to see if the process would bring in any saving in water and care needed for the crop. The indications are that about 15 days of watering and care can be saved.

A very important line of activity on the Farm is connected with the cultivation of cocoanuts. Of 355 palms planted in 1923-24 all except four have come to bearing. The average yield per year per palm has gradually gone up from 45 in 1930-31 to 55 in 1934-35. Eighteen palms have been selected for their prolific bearing and size of nuts, and the material obtained is being germinated and planted out for comparative trials on a regular plan. It is ultimately hoped to bring one-third of the wet area under this crop.

As per scheme sanctioned by Government to popularise fruit cultivation in the Vani Vilas Sagara tract, a large number of seedlings of fruit trees have been raised for sale at a nominal price.

A number of bee hives are being kept in the coconut garden. Of 12 such hives, only eight were inhabited during the year. As weather conditions were not favourable for plentiful production of honey by the bees, honey was not extracted from any of the colonies.

As the policy of irrigation in the Vani Vilas Sagar area has been changed to one of intermittent irrigation throughout the year, the working plan of the Farm is being modified to suit altered conditions and give more scope for the cultivation of cocoanut, plantains, irrigated cottons, tobacco and chillies, confining sugar-cane to an area of not more than ten acres and giving up paddy altogether.

IRWIN CANAL FARM.

The Irwin Canal Farm, near Mandya, continued its work as usual. Nearly 230 acres were under cane crop to supply the needs of the Sugar Factory as well as for experimental purposes. Unlike in other parts of the State, cane is here being planted from January to middle of August. The seasonal influences on the maturity of cane and its keeping qualities after reaching maturity are being studied. The indications at present are that cane planted between February and April matures in about 12 months, May and June plantings seem to take between 13 and 14 months to ripen while cane planted after 15th July seems to mature between 12 and 13 months. These indications have to be correlated with recovery of sugar from cane in the Factory, and both planting and harvesting adjusted accordingly.

Of 21 varieties of J. 213 seedlings tested last year only five were found to be promising and these have been multiplied on one acre plots for milling tests in the Factory. Of exotic canes, P.O.J. 2878 and E.K. 28 are also under trial on one acre plots. From the standing crop of cane, it looks as if all these varieties do very well if planted after June.

The shoot borer of cane assumed an important aspect in the Irwin Canal tract. After studying various methods of control, it was found that a slight earthing up when the young crop is four to six weeks old and repeating the operation a fortnight later acted as a very effective check in keeping down the pest. An area of 120 acres of plant cane crop has been very effectively controlled in this way.

Green manuring of cane was tried on an area of 125 acres. This crop not only kept the weeds down but also improved the soil texture considerably. The same thing was tried in a field of ratoon cane also. Sunnhemp seeds were sown between rows of cane when the young cane shoots were about 9" to 12" high. Both crops grew vigorously and this method was found to keep this cane also free from shoot borers.

An area of 23 acres was devoted to paddy crop, and four varieties were tried with the result that a maximum yield of 1,500 seers per acre was obtained from the variety Kaddi Sanna.

The introduction of short season money crops like tobacco, cotton and groundnuts is one of the lines of work on the Farm. Three varieties of tobacco were grown on a total area of seven acres. The green leaf was cured by the local method in shade, and an average yield of 20 maunds of cured leaf per acre was obtained. A flue curing barn has recently been put up on the Farm for curing the standing crop of 1935-36.

Six varieties of cotton were also tried. Conditions were not very favourable and the yield varied from 160 lbs. to 390 lbs. of seed cotton per acre according to variety and season of sowing.

Two varieties of groundnuts were sown after sugar-cane was harvested. The crop did very well, the average yield being over 3,000 seers of clean pods per acre.

About 60,000 casarena seedlings have been planted out along the Farm boundary, on the sides of valleys and also along the low lying swamps. Every plant as it grows up adds to the permanent asset of the Farm. Two thousand of the plants have already grown very vigorously. An annual income is expected from loppings of side branches as the trees grow up.

Extensive underground drains have been laid out to reclaim water logged lands and alkali patches. Twenty-one acres of such soil have been reclaimed at a total cost of Rs. 403, and sugar-cane planted on these plots.

COFFEE EXPERIMENTAL STATION, BALEHONNUR.

The Balehonnur Coffee Station continued its useful work on well defined lines as in the previous year. The Scientific Officer of the United Planters' Association of Southern India continued his work on the Station and all facilities and co-operation were continued to him as usual.

Even on this Farm seasonal conditions were not quite normal. In spite of all adverse conditions, it is a matter of satisfaction to note that the Station did not suffer so badly as some estates elsewhere.

Manurial experiments were continued on the remodelled basis to eliminate marginal effects but have not run sufficiently long to be reported upon. In the H-ion cisterns meant to study the relation between growth of coffee and soil reaction, sulphur was used successfully to bring about the necessary acid reaction of the soil. The plants do not as yet show any differences worth being commented upon.

Results of spraying experiments to control coffee Koleroga and leaf disease have only confirmed previous experience. Several kinds of oils including groundnut oil were tested as spreaders and adhesives. As compared with casein, oils were found to be better and less expensive. Molasses from Mandya Sugar Factory are also being tried, and the material promises to be a good substitute for casein. The point whether an adhesive is necessary at all is also being studied.

Four different spraying outfits were tried. The Central Industrial Workshop double suction pump was found to work satisfactorily and compare favourably with the double suction pumps now in use both as regards efficiency and output of work.

The most important line of work on the Farm is that connected with plant breeding. The chief aim is to evolve a suitable Arabica type of coffee consistent with high yield, good quality and disease resistance. The second generation of seedlings are now growing in nursery beds, and the plants will be transferred to permanent plots very soon. Individual plant yield records have been made to see how far yield is a hereditary character. This is a line of work which involves considerable time, resources and patience. It will take a few more years of work to be able to report tangible results.

Vegetative propagation by grafting was continued. Arabica grafts on stumped Robusta five to six years old have done very well. Attempts are being made to propagate by rootings of cuttings also. A propagating chamber on the principle of the solar propagator has been constructed to study whether cuttings can be grown successfully under controlled heat conditions. Orange cuttings rooted freely in the chamber while those planted in beds had failed.

Other experiments such as protecting Dadap stakes from sun scorching by means of white-washing, depth of sowing coffee seeds in beds, steeping nursery baskets in copper sulphate solution to lengthen their durability, use of peaberry seeds for planting purposes, various methods of planting and pruning are being continued.

In addition to cardamom cultivation, fruit cultivation too has been started on a small scale. About 200 cashewnut seeds had been dibbled in 1930-31. Plants have come up well and some more seeds have been put down. About 65 plants which are four years old are doing quite well.

DEMONSTRATION AND PROPAGANDA WORK IN THE DISTRICTS.

Work in the Districts continued on the same lines as in previous years, but on a somewhat restricted scale, partly on account of unfavourable seasonal conditions, and partly due to limited funds that could be made available for the purpose. The entire executive staff in the Districts, particularly in the Maidan parts of the State had, during the first half of the year to be engaged almost exclusively in a special campaign undertaken by the Department to avert a wide spread scarcity of fodder that appeared to be imminent consequent on the almost complete failure of the South-West monsoon. Over 1,200 pallas of Bilijola were purchased and distributed among the raiyats in the affected areas and arrangements made to sow it all for fodder relying on the chance of catching the later rains at least and turning them to the best advantage possible under the circumstances. Barring a few exceptions in localities where even these rains failed the campaign was a distinct success. Large quantities of green fodder were harvested by most of the raiyats that took advantage of the scheme and not a few of them got some grain as well.

The usual items of demonstration and propaganda such as the use of improved implements and manures, (ii) distribution of new and better varieties of seed, (iii) construction of improved furnaces for jaggery boiling and driers for the drying of areca and (vi) spraying and other remedial measures against pests and diseases, were all conducted to the extent permitted by funds and seasonal conditions. It is gratifying to note that although a fall under some of the heads was inevitable, there was a

marked increase under others. Of the more prominent items among these latter may be mentioned (i) the sale of artificial manures for money crops such as coffee, cardamom and sugar-cane (ii) spraying operations against diseases and pests of coffee and areca and (iii) demand for improved varieties of sugar-cane and cotton, H.M. 320 and selection 69 particularly. I consider this as a conclusive proof of the permanent place these items of improvement have come to take in our agriculture.

Another gratifying feature of the year's work connected with agricultural improvement was the steadiness with which some local artisans pursued their attempts to manufacture cheaper but fairly effective imitations of improved ploughs and cultivators and sprayers and spare parts. I look forward with confidence to further development in this line of work in the near future.

Work through Co-operative Societies and Village Panchayets has not however been as satisfactory as one would have desired due, no doubt, to adverse seasonal and other conditions. I hope the set back is only temporary and with the return of normal conditions the work will be taken up with greater enthusiasm and vigour.

Agricultural Depots in all the Districts of the State have, with few exceptions, continued to turn out very satisfactory work.

AGRICULTURAL EDUCATION.

The Hebbal Agricultural School completed another successful year. Thirty-eight students sat for the final examination, 16 were declared eligible for the Diploma and one of them passed with distinction.

The number of applications received for admission into the first year class was 62, against 199 during the year 1933-34; the apparently great fall in the number being due to the higher entrance qualification of E.C. and P.S., of the Mysore S.S.L.C., or its equivalent now demanded from the applicants.

The admittedly low minimum qualification fixed for admission at the time the School was started some 22 years back when agriculture as a science or as an art had no attraction for our educated young men necessitated all these years our keeping the standard of instruction imparted in the School, also at a correspondingly low level. The steady rise in the number of well qualified S.S.L.C's, Intermediate's and B.A.'s and B.Sc's among the applicants during the last few years indicating a very desirable and healthy change in the attitude of our educated young men towards what has been aptly described as the basic industry of the State was therefore taken advantage of during the year under report to raise both the minimum entrance qualification and the standard of instruction almost to the level of those of some of the Agricultural Colleges in other parts of India. It is confidently hoped that this will result in providing the State with more efficient leaders for the spread of improved agriculture and the Department with a better class of recruits.

Nothing has however been done as yet to remedy the inadequacy of accommodation in the Hostel, or the want of suitable lecture rooms and laboratories. The make-shift arrangements with which we started the School continue to serve the purpose to-day in spite of increased numbers and a higher standard of instruction. The staff of the School has also to be strengthened considerably to cope with the increased work.

The Vernacular Schools at Chikkanahally, Ramakrishnapur and Hassan have likewise had a very successful year. The last named institution has, as in the previous two years, been under the management of the Hassan District Board.

The performance of the students of the Ramakrishnapur Agricultural School was as usual particularly good. All the eleven students that sat for the Final Examination came out successful, one of them heading the list of successful candidates from all the three schools in the State. Not a little of the success of the School is due to the personal interest that Mr. G. Venkataramanayya, the Donor, has been evincing in the work of this Institution.

The District Boards of the three Districts in which these schools are situated have continued to evince the same interest in the well being of these institutions and the thanks of the Department are due to all of them.

A lot of work was done for the Dasara Exhibition as usual. The Jeevanarayana-katte demonstration plots were maintained at their usual standard and attracted a lot of visitors.

The Agricultural and Experimental Union continued its useful work in issuing the English and Kannada journals. Owing to unfavourable seasonal conditions, field experiments could not be undertaken by its members.

In conclusion, it is a pleasant duty to record my grateful thanks to all associated with me in work for their ready and whole-hearted co-operation in running a Department in which team work is absolutely essential for any progress.

B. NARASIMHA IYENGAR,
Director of Agriculture.

PART II.

Charge.—Mr. A. K. Yegnanarayana Aiyar was in charge of the Department as Director till 4th January 1935 when he went on two months' leave preparatory to retirement, and I have been in charge since then.

Mr. K. Bhima Rao continued as Headquarters Assistant till 6th February 1935 when he was appointed Agricultural Chemist and Mr. B. Shankara Rao Badami succeeded him. They were confirmed in their respective appointments from 4th March 1935.

Dr. V. K. Badami, Economic Botanist was appointed to act as Deputy Director from 4th January 1935 and confirmed in that appointment from 4th March 1935. While assisting the Director in discharging some of his duties, he still continues to be in charge of the Section of Botany.

Tours.—Mr. A. K. Yegnanarayana Aiyar was on tour for 70 days during his period of office. Since taking over charge, I have spent 85 days on tour. The following Gazetted Officers of the Department were on tour for the number of days mentioned against their names.

<i>Name.</i>	<i>No. of days on tour.</i>
Mr. B. Shankara Rao Badami as Senior Assistant Chemist	15
Dr. B. T. Narayanan, Senior Assistant Chemist	103
Mr. M. J. Narasimhan, Mycologist	108
Mr. S. V. Venkatarayan, Senior Assistant Mycologist	13
Mr. T. V. Subramanyam, Entomologist	83
Mr. B. Krishna Murthi, Senior Assistant Entomologist	76
Mr. S. Daniell, Assistant Director, Tumkur	101
Mr. C. Ellappa Chetty, Assistant Director, Shimoga	147
Mr. K. H. Srinivasan, Assistant Director, Chikmagalur	140
Mr. S. H. Bennur, Assistant Director, Mysore	208

Meetings attended :—

1. Legislative Council	2
2. Representative Assembly Session	2
3. Development Committee Meetings	4
4. Krishnaraj Sagar Working Committee Meetings	3
5. The Indian Central Cotton Committee Meetings	2
6. Meeting of the Board of the Imperial Council of Agricultural Research ..	1
7. The Sugar Company Meetings	7
8. Miscellaneous	46

INSPECTIONS.

OFFICES, FARMS AND SCHOOLS.

Director, Mr. A. K. Yegnanarayana Aiyar ..	Irwin Canal Farm ; S. K. V. D. Patasala ; Babbur Farm ; Ramakrishna Krishisala ; Balehonnur Farm ; Cattle Breeding Station at Ajjampur ; Marthur Farm ; Bhadra Agricultural Colony ; Nagenahally Paddy Breeding Station.
Director, Dr. B. Narasimha Iyengar ..	Irwin Canal Farm ; Ramakrishna Krishisala ; Rayanakere Dairy Farm ; Balehonnur Farm ; S.K.V.D. Patasala ; Veterinary Hospital at Nelamangala ; Babbur Farm ; Veterinary Hospital, Chitaldrug ; Veterinary Hospital, Shimoga ; Assistant Director's Office, Shimoga ; Assistant Director's Office, Mysore, and Bhadra Agricultural Colony.
Deputy Director, Dr. B. Narasimha Iyengar ..	Assistant Director's Office, Chikmagalur ; Hebbal Farm ; Serum Institute.

LEAVE TO GAZETTED OFFICERS.

1. Mr. A. K. Yegnanarayana Aiyar, Director, Privilege leave for two months from 4th January 1935.
2. Mr. B. Shankara Rao Badami, Senior Assistant Chemist, was on privilege leave for one month from 1st August 1934.

3. Mr. B. Krishna Murthi, Senior Assistant Entomologist, was on leave for two months and two weeks from 15th June 1935.
4. Mr. M. J. Narasimhan, Mycologist, privilege leave for eight days from 13th June 1935.
5. Mr. S. V. Venkaterayan, Senior Assistant Mycologist, privilege leave for two months from 1st September 1934.

LIBRARY.

Accessions to the Library were as follows :—

Bulletins and Circulars	..	..	..	..	..	..	576
Reports	..	..	..	..	..	..	135
Books purchased	..	..	..	..	..	..	9
Periodicals and Journals bound and added to the Library	..	..	..	..	..	..	127

The number of periodicals acquired by subscription or otherwise are as hereunder :—

By subscription	..	..	..	..	..	..	51
By Exchange	..	..	..	..	..	..	55

The number of books lent out to persons unconnected with the Department during the year was 103.

The following were the Departmental publications issued during the year :—

1. Irwin Canal Soil Survey Report Series No. 1 (Introductory and General Part).
 2. Coffee Experiment Station Bulletin No. 12 (Annual Report of the Coffee Scientific Officer, 1933-34).
 3. Coffee Experiment Station Circular No. 1 (Report on the disease situation in Coffee areas in 1933).
 4. Coffee Experiment Station Circular No. 2 (Vegetable oils as spreaders for Bordeaux Mixture).
 5. Coffee Experiment Station Circular No. 3 (Souvenir Hand-Book of the Coffee Experiment Station, Balehonnur).
 6. Circular No. 53 (Sugar-cane Borers and their Control in the Mysore State).
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REPORT OF WORK DONE IN THE CHEMICAL SECTION DURING THE YEAR 1934-35.

The following have been the main items of work during the year under report:—

- I. Pot culture experiments to find out.
 - (a) the assimilation of essential plant foods by ragi at different stages of its growth in sand culture and the influence of differential and periodical manurial treatment on the yield of crop;
 - (b) the assimilation of essential plant foods by cotton at different stages of its growth in sand culture and the influence of differential and periodical manurial treatment on the yield and quality of cotton and the appearance and control of the red leaf blight disease of cotton.
 - (c) the influence of soil reaction on the growth of coffee.
- II. Experiments in reinforced concrete frames resting on natural soil to find out manurial requirements of paddy in a clay soil and the efficiency of various paddy mixtures.
- III. Field experiments on the manuring of sugarcane, paddy, ragi, coffee, cotton, jola, areca and cocoanut, on the various farms and private estates.
- IV. Investigations regarding the use of indigenous plant substances as insecticides.
- V. Studies on the distribution of essential plant foods in the various parts of coffee and their influence on the setting of the coffee blossom and the development of the berry.

I. *Pot Experiments.*—As in former years each treatment was repeated four times and water requirement was maintained at 70 per cent of the water holding capacity of sand used for the purpose. Except in the case of check pots, which received no manure at all, each of the other pots was manured with a total of two grams of nitrogen, three grams of phosphoric acid and four grams of potash.

(a) In the first series of experiments with ragi, samples were taken at the short blade, milk-ripe and dead-ripe stages from three of the four pots under experiment, and divided into their component parts and dried at 40-60° C in an electric oven and analysed for their essential plant food content.

Table I summarizes the details of manuring, the material used and the results so far obtained.

Table I (b) and (c) give the crop yields under differential and periodical manurial treatments.

The foregoing experiments have been in progress for only one year and are under repetition. A detailed discussion of the results obtained is held over till the results of this year's experiments are also available.

(b) In the series of experiments with cotton, samples were collected from three out of the four pots at the flowering, boll-forming, milk-ripe and boll-bursting stages and treated in a similar manner to the ragi samples.

Table II summarizes the results obtained. A formal discussion is held over in this case also as these experiments have only been under way during the past one year.

As regards the influence of differential and periodical manurial treatment on the appearance and control of the red leaf blight disease of cotton, indications are that a completely and adequately manured plant is least affected while a nitrogen starved plant is most susceptible. Potash starvation does not seem to lessen resistance where as phosphorus starvation definitely increases susceptibility. These results are only tentative and subject to confirmation by the experiments which are in progress now.

(c) As a result of a long series of sand culture experiments in pots, it was stated last year that indications are that coffee thrives best in neutral soil when it shows a reaction somewhere between PH 6.5 and 7.5. Further results obtained in this connection confirm our previous statement. Table III summarizes the results of a few experiments and shows that the growth of plant and root development are undoubtedly

best at the neutral point and that a proper assimilation of plant foods is only possible at that range. These experiments are being repeated at the Coffee Experimental Station, Balehounur, on natural soils. It may be observed in passing that these results add considerable support to the practice of liming coffee soils wherever necessary and are confirmatory of the empirical advice which is being given all these days.

II. Experiments with paddy in reinforced concrete frames containing a clay soil were continued during the year, with the modification that cisterns which received potash during the last eight years ceased to receive it this year so that the effect of accumulation of potash, if any, could be found out, secondly those cisterns which were not receiving potash till now, were given potash to see whether the soil was exhausted of potash and therefore needed any for better yield of crop. The results which are presented in Table IV continue to indicate that potash plays no important part in the manurial scheme for paddy.

Of the various mixtures and combined manures, nicifos combined with super or sulphate of ammonia, according to the grade of material used continues to give slightly better yields than a cake and super mixture for clay soils. This confirms our results reported last year.

III. *Field Experiments.*—(a) *Dry Crops.*—Experiments with ragi and groundnut on the Hebbal Farm, cotton and jola on the Babbur Farm were continued during the year under report. The results obtained so far do not admit of any definite interpretation. They do not indicate any significant response to particular manurial treatment. A discussion of the results so far obtained is held over for a future date.

(b) *Paddy on the Nagenahally, Hebbal and Marthur Farms.*—Experiments on the Nagenahally Farm, a channel irrigated tract, over a period of four years had shown that systematic manuring was essential for a good yield of crop, secondly that the potash requirement of paddy even in these light soils was insignificant, thirdly that ammonium sulphate and groundnut cake were the best forms of nitrogen for application to paddy, the former being slightly better and lastly that the most economical and effective mixture should contain two parts of nitrogen to three of phosphoric acid. The results obtained during the year under report confirm these findings. In view of this, experiments on the Nagenahally Farm are being confined to test the efficiency of ammonium sulphate against that of groundnut cake and are being extended to find out if an organic manure like compost can well replace groundnut cake. Furthermore the effect of giving a basal dose of green manure is also being studied.

Experiments on the Hebbal Farm on tank irrigated valley lands where soils are not generally light in texture, were continued on the same lines as in the former years. The results obtained confirm our earlier findings and suggest that the addition of green manure is overwhelmingly significant, secondly that the use of fertilizers definitely increases the yield of both grain and straw, and thirdly that the action of fertilizers and green manure is independent of each other and is complementary.

Experiments on the Marthur Farm, a region of heavy rainfall where soil is lateritic in nature, were modified during the year consequent on the experience of the past four years. As these experiments have been in operation for only one year, discussion is postponed to a later date.

(c) *Sugarcane.*—In last year's report, a summary of results obtained on the Babbur Farm over a period of five years was presented. As a result of a further year's experiment, it has been confirmed that potash does not seem to be necessary on the Babbur type of soils. As a matter of fact indications are that an addition of potash to a mixture containing nitrogen and phosphoric acid actually depresses the yield. Experiments on the potash requirements of cane are however being continued on the Irwin Canal Farm.

The efficiency of ammonium sulphate is again impressed and there is a significant rise in the yield of cane when 500 lbs. of this manure is given.

Experience gained on this Farm has been very useful in connection with the several manurial experiments on the Irwin Canal Farm, Mandya. The practice of recommending 3 cwts. of super and 5 to 7 cwts. of ammonium sulphate is based upon these results and found to work well.

Experiments on the time of application of the different manures, the nature of manures applied and their influence on growth, yield and quality of cane are under way and interesting results are expected during the course of the year or so.

Experiments are also on hand of studying the maturing and keeping qualities of cane, with reference to the season of planting.

Experiments with Perennial Crops.—Cocoanut manurial experiments on the Babbur Farm were continued during the year under report. No interesting results were obtained during that period.

A table summarizing yield of areca during a period of 4 years under manurial treatment is given in the Appendix. The table also gives the yield during the past year when the palms were unmanured, with a view to change over to a modified system of manuring. These latter give the residual effect of the manures previously applied.

Experiments on coffee are being continued on the Balehonnur Station on the same lines as before. A first set of results of experiments on both old and young coffee laid out to minimize marginal effects was obtained during the year under report. As these results do not yet admit of interpretation, they are held over till a further set of results has been obtained.

IV. *Use of Indigenous Plant Substances as Insecticides.*—Owing to financial stringency, work on this subject had to be suspended till early in January when aided by a grant from the Imperial Council of Agricultural Research, the investigation was resumed.

The hongey oil resin soap continued to attract attention and if demand is any indication, this soap is successfully replacing fish oil resin soap in Mysore.

Systematic investigation on a new plant substance *Tephrosia Candida* was started early this year and interesting results have been obtained. The extraction of the active substance has proceeded so far that the pure insecticide itself is hoped to be isolated in the course of the year. Attempts will then be made for large scale preparation of the substance. It is interesting to note that the insecticidal activity of *Tephrosia-Candida* is practically universal against all kinds of plant pests.

Work on *Mundulea Suberosa* was suspended as it was found that its insecticidal activity was of a very limited character and in reference to only certain particular types of insects.

V. *Studies on the Distribution of Plant Foods in the Coffee Bush and its Influence on the Setting of the Coffee Blossom and the Development of the Berry.*—Work on the above subject was started during the year under report to find out how far and in what manner the three essential plant foods helped in the proper setting and development of the berry. Though this investigation is yet in an early stage, indications are that a large amount of potash is stored in the blossom before it opens and sets, thus emphasizing the need of potash for a successful setting of the blossom with a moderate shower of rain. It is hoped to present details of this investigation during the course of the current year.

VI. *Laboratory Work.*—In addition to analysis of samples in connection with the foregoing items of work, an analysis of over a 100 soil samples from 2,000 acres of land under coffee was made with reference to their lime requirement. Analysis of grass samples and some other fodder crops was also undertaken in relation to their food value. Besides, several samples of manures and manure mixtures from land-owners, coffee planters, and agriculturists were also analysed and suitable advice given. The Section continued to technically supervise the manufacture of compost at Mysore, and analysed compost produced there for its plant food content.

The following table gives an idea of the analytical work done in the laboratory as well as in the field.

Work done during the year 1934-35.

Details					No. of samples	No. of determinations
1.	Pot culture and nutrition studies	..	..	..	170	2,202
2.	Soils	..	..	..	200	400
3.	Fertilizers	33	..	..	....	179
	Compost	38	..	..	71	244
4.	Foods and feeding stuffs	..	..	..	15	235
5.	Sugarcane	..	..	..	330	1,685
6.	Miscellaneous	..	..	..	7	43
7.	Tar Emulsions	..	..	..	....	400
Total					793	5,388

B. T. NARAYANAN,
Offg. Agricultural Chemist.

TABLE I (a).

*Ragi nutrition studies, 1934-35.**Ragi in pots.*

Table showing the development of the ragi plant and percentage recovery of the various plant foods at different stages of its growth in sand culture.

Description of sample	Period	Green weight in grams	Weight in grams of plant foods recovered			Percentage recovery of plant foods		
			N	P	K	N	P	K
Floral parts	Flowering stage ..	57.0	1.02	0.16	0.95	..	..	..
Stalk .. .. .	.....	535.0	3.23	2.17	8.61	..	..	..
Roots	12 weeks	37.0	0.59	0.13	0.51	..	..	..
Whole plant .. ..	.....	629.0	4.84	2.46	9.07	80.7	27.4	75.6
Ear-heads	Milk-ripe stage ..	92.0	2.43	1.43	2.26	..	..	..
Straw .. .. .	.....	480.0	2.55	1.95	11.38	..	..	..
Roots	15-16 weeks	85.0	0.54	0.13	0.42	..	..	..
Whole plant .. ..	.....	657.0	5.52	3.51	14.06	92.0	39.0	117.0
Grain	Dead-ripe stage ..	55.0	1.72	1.07	0.99	..	..	..
Straw .. .. .	.....	274.0	2.22	2.90	12.34	..	..	..
Roots	17-18 weeks	92.0	0.60	0.16	0.63	..	..	..
Whole plant .. ..	.....	421.0	4.54	4.13	13.96	75.7	46.0	116.3

TABLE (b). I

*Ragi nutrition studies, 1934-35.**Ragi in pots.*

Statement showing the average yield of grain and straw and percentage recovery of plant food in the crop on a differential manurial treatment.

Pots	Treatment	Yield in grammes		Total plant food recovered in the crop in milligrammes			Percentage recovered out of quantities supplied		
		Grain	Straw	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
119-112	N+P+K	57	134	1,379.3	1,182.5	5,508	68.9	39.4	100
113-116	N+P	54	126	1,347.2	1,190.6	..	67.4	39.7	..
117-120	N+K	23	68	963.5	..	2,985.4	48.2	..	74.6
121-124	P+K	10	15	..	61.24	325.1	..	20.4	8.1
125-128	N	24.4	75	1055.8	..	..	52.8	..	..
129-132	Check	4.4	12	36.5	29.0	45.0	..	..	..

TABLE I (c).

*Ragi nutrition studies, 1934-35.**Ragi in pots.*

Statement showing the average yield of ragi grain and straw on a regulated supply of the different plant foods at particular stages of its growth in sand culture.

No.	Treatment at start	Short blade stage		Milk-ripe stage		Weight in grammes	
						Grain	Straw
1	N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	$\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	$\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	51.0	134.0
2	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	37.0	105.0
3	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+K	$\frac{1}{4}$ N+ $\frac{1}{2}$ P	..	$\frac{1}{4}$ N+ $\frac{1}{2}$ P	..	32.0	97.5
4	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	39.0	101.0
5	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+K	$\frac{1}{4}$ N+ $\frac{1}{2}$ K	..	$\frac{1}{4}$ N+ $\frac{1}{2}$ K	..	40.0	101.0
6	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	$\frac{1}{4}$ N+ $\frac{1}{2}$ P+ $\frac{1}{2}$ K	..	37.0	103.0
7	P+K	$\frac{1}{2}$ N every fortnight till short blade	..	$\frac{1}{2}$ N every fortnight till short blade	..	55.0	124.5
8	P+K	$\frac{1}{2}$ N every fortnight till milk-ripe stage	..	$\frac{1}{2}$ N every fortnight till milk-ripe stage	..	49.0	101.5

Chemical Section.

TABLE II.

Cotton nutrition studies, 1934-35. (Cotton in pots--sand culture.)

Table showing the development of the cotton plant and percentage recovery of plant foods at various stages of its growth in sand culture.

Description of sample	Period	Green weight in grammes	Weight in grammes of plant foods recovered			Percentage recovery of plant-foods		
			N	P ₂ O ₅	R ₂ O	N	P ₂ O ₅	K ₂ O
Floral parts ..	Flowering stage ..	15.0	0.30	0.13	0.36	..	..	..
Stem and twigs ..	.....	65.0	0.70	0.31	1.88	..	..	..
Leaves ..	11 weeks ..	124.0	2.87	0.77	3.74	..	..	..
Roots ..	.....	57.0	0.33	0.15	1.67	..	..	..
Whole plant ..	.....	261.0	4.20	1.36	7.65	70.0	15.1	63.7
Floral parts ..	Boll-forming stage ..	51.0	0.57	0.20	0.78	..	..	..
Stem and twigs ..	.....	64.0	0.78	0.25	1.87	..	..	..
Leaves ..	.....	111.0	2.35	0.61	3.43	..	..	..
Roots ..	13-14 weeks ..	82.0	0.43	0.18	1.52	..	..	..
Whole plant ..	.....	308.0	4.13	1.24	7.60	69.0	14.2	63.3
Floral parts ..	Boll-bursting stage ..	60.0	0.73	0.34	0.95	..	..	..
Stem and twigs ..	.....	81.0	0.60	0.32	2.17	..	..	..
Leaves ..	.....	95.0	2.03	0.66	2.50	..	..	..
Roots ..	.....	77.0	0.37	0.18	1.50	..	..	..
Whole plant ..	.....	313.0	3.73	1.50	7.12	62.5	16.8	59.4
Floral parts ..	Dead-ripe stage ..	76.0	1.20	0.82	2.10	..	..	..
Stem and twigs ..	.....	109.0	0.70	0.54	3.33	..	..	..
Leaves ..	.....	71.0	1.39	0.47	2.39	..	..	..
Roots ..	23 weeks ..	96.0	0.29	0.39	1.23	..	..	..
Whole plant ..	.....	352.0	3.58	2.22	9.05	59.5	23.6	75.6

TABLE III.

Coffee in sand culture...

Statement showing the development of the coffee bush in relation to the soil reaction and percentage recovery of plant foods at different stages of its growth.

Reaction of environment	Age	Total weight of plant in grammes	Percentage of plant overground	Percentage of plant underground	Percentage recovery of plant foods		
					N	P ₂ O ₅	K ₂ O
6.0 acid ..	20 months	59.50	52.40	47.60	5.5	0.35	4.0
6.5 slightly acid ..	20 "	158.20	82.40	17.60	17.7	2.6	15.4
	22 "	168.30	76.00	24.00	15.8	2.6	12.0
7.0 neutral ..	20 "	236.20	83.10	16.90	25.4	3.7	23.8
	22 "	339.80	72.00	28.00	28.5	5.3	25.5
7.5 slightly alkaline ..	20 "	193.10	83.10	16.90	21.3	2.9	19.6
	22 "	329.80	73.00	27.00	27.4	5.35	23.4

TABLE IV.

Paddy in cisterns, 1934-35.

Statement showing yield of crop and percentage recovery of plant foods.

No.	Treatment	Average yield in gms.		Per cistern total crop	Percentage recovery of plant foods		
		Grain	Straw		N	P ₂ O ₅	K ₂ O
1	Check ..	236.3	259.0	495.3	..	..	..
2	N ..	256.2	300.1	556.3	6.3	..	..
3	N+P ..	379.9	508.3	888.2	45.23	23.63	..
4	N+P+K ..	380.2	483.7	863.9	41.64	15.70	76.9
5	G.N. cake+super ..	303.7	350.1	653.8	30.01	15.61	..
6	$\frac{1}{2}$ G.N. cake. $\frac{1}{2}$ Am ₂ SO ₄ +Super ..	322.6	407.8	730.4	24.00	7.64	..
7	Nicifos 17-45+Am ₂ SO ₄ ..	369.1	514.6	883.7	47.10	13.36	..
8	Nicifos 22-18+Super ..	311.6	394.0	705.6	21.08	5.57	..

TABLE V.

Areca manurial trials, Marthar Farm.

Average yield of areca in pounds per palm.

Treatment per palm	Yield in lbs. per palm manured				Average 1930-34	Unmanured yield 1934-35
	1930-31	1931-32	1932-33	1933-34		
3 lbs. G. N. cake	..	..	..	..	..	..
5.5 lbs. super	16.50	17.00	18.75	17.25	19.50	16.00
0.5 lbs. K ₂ SO ₄	..	..	..	..	..	..
3 lbs. G. N. cake	..	..	..	..	..	..
5.5 lbs. super	14.25	14.25	18.00	17.75	16.50	16.00
1.0 K ₂ SO ₄	..	..	..	..	..	..
3 lbs. G. N. cake	..	..	..	..	..	..
2.0 lbs. super	18.25	17.00	17.50	19.00	18.00	18.00
1.5 lb. K ₂ SO ₄	..	..	..	..	..	..
1.4 lbs. Nitrogen	..	..	..	..	..	..
2.0 lbs. super	17.00	15.50	17.50	18.25	17.00	16.50
1.0 lbs. K ₂ SO ₄	..	..	..	..	..	..
1.2 lbs. Am ₂ SO ₄	..	..	..	..	..	..
2.0 lbs. super	15.75	17.25	16.50	17.00	16.50	16.00
1.0 lb. K ₂ SO ₄	..	..	..	..	..	..
1.5 lbs. G. N. cake	..	..	..	..	..	..
1.0 lbs. super	17.75	18.75	18.75	19.00	19.00	18.00
0.5 lb. K ₂ SO ₄	..	..	..	..	..	..

TABLE VI.

Statement showing the yield of groundnut in cisterns under differential manurial treatment.

	Grammes	
	Pods	Seeds
Check	440.8	319
Nicifos 17-45 + K	442.7	314.7
N + P + K	477.7	343.7
P + K	471.7	334.4
Nicifos 13-48 + K	423.8	312

Chemical Section.

REPORT OF WORK DONE IN THE MYCOLOGICAL SECTION FOR THE YEAR 1934-35.

1. *Areca Koleroga*.—The disease was not virulent during the year as the monsoon was weak with continuous bright weather for long periods. The disease appeared at the beginning of the season in a group of villages bordering Tirthahalli and Nagar Taluks, where it had not been prevalent for a long period in spite of the fact that this area has a very heavy rainfall. A new depot at Hebbagilu was opened to supply chemicals to those villages. As the disease was very virulent round about Halesunka depot during the previous season, the depot was stocked with more than twice the quantity of chemicals sold last year. The whole stock was exhausted in a fortnight and the gardeners had to be supplied with chemicals from the adjoining depots. Chemicals sufficient for spraying 11,577 acres of garden have been supplied from the various depots. The total transaction, relating to Arecanut spraying amounted to Rs. 22,852-5-9. The Societies at Beemankone and Thalkalkoppa have sold chemicals worth Rs. 900 and Rs. 250 respectively. Attempts are being made to induce other Societies in the area to take up the work.

Groundnut oil was used as a spreader of Bordeaux on a fairly large plot at Marthur Farm and in private gardens. The mixture has stood the rains as well as Casein-Bordeaux and has checked the disease equally well.

Another spreader was experimented with during the year, using Molasses obtained from the Mandya Sugar Factory. The spraying trials were conducted at the Marthur Farm and in some private gardens.

The addition of Molasses to the spray mixture, was found to improve the physical character of the mixture, as a better suspension was obtained than in the case of Casein-Bordeaux, and to give a uniform spread on the sprayed surface. In addition, the cost of the spray mixture is appreciably reduced. About 4 acres areca garden and five acres of Coffee were sprayed with Molasses-Bordeaux. The results are being watched. The object of these experiments with different spreaders, is to place at the disposal of the garden owners, local products such as groundnut oil, molasses, etc., for spraying purposes in lieu of Casein, which we are importing into Mysore from North India to the extent of nearly Rs. 40,000.

2. *Anabe-Roga of Arecanut and Cocoanut*.—The inoculation on the Cocoanut palms in the laboratory garden referred to in the previous report show very slow progress. No marked change has taken place in the condition of the palms.

In regard to the removal of the infection from the garden, treatment of disease centres, with 2 per cent copper-sulphate solution seems to have no effect on the fungus as sporophores were seen to grow afresh from the stumps. Even burning the stumps *in situ* is useless as fire does not consume the stumps unless they are uprooted. Setting fire to the stumps without removal from the ground only chars the outside, and the fungus puts forth fresh sporophores in course of time. The effect of the other treatments with sulphur, pyroligneous acid, and calcium acetate are not yet apparent.

With the help of the Chemical Section the pH. value of the soil in different parts of the treated garden were determined. Contrary to expectation it was found that none of the samples were acid. They were either neutral or slightly on the alkaline side. Of the treatments sulphur showed some tendency to bring the soil to the neutral point.

The best and the safest treatment that can be recommended at present is the removal and destruction of diseased materials and portions of the fungus, and isolation of these centres of infection. An article on the control of this disease was contributed to the Agricultural Calendar for the year 1935.

3. *Sclerotial Disease of Plantains*.—A fairly wide spread disease of plantains (Ras Bale) was noticed in Mysore and Tumkur districts, where they are grown as a three year crop after paddy. The earliest external symptom is a splitting of the pseudostem near the ground level and a reddish discoloration of the sheaths. The disease progresses inwards penetrating layer after layer of leafsheaths, till finally a rotting of the pseudostem sets in. The fungus causing the disease has been found to be *Sclerotium rolfsii*. Numerous brown sclerotia are formed on the inner surface of the leaf

sheaths. Clamp connections are present. The sclerotia, which are able to withstand desiccation, germinate readily in the soil under the moist conditions of the plantain garden, and infect the plants. The following treatments to control the disease were first tried in a garden at Hosvitu, Nanjangud Taluk :—

- (1) Applying 2 ozs. of sulphur to the soil around the base.
- (2) Bordeaux mixture $\frac{1}{2}\%$ poured around the base at the rate of 2 gallons.
- (3) Bordeaux paste 4 : 8 : 6 swabbed on the pseudostem to a height of 2 feet from the ground level.

All the infected sheaths were removed and the pits cleaned up before the treatment was applied. The treatment was taken up in other infected gardens also in Mysore and Tumkur. Over 2,000 plants have been successfully treated so far with Bordeaux paste and $\frac{1}{2}\%$ Bordeaux. The application of sulphur did not prove effective. Further experiments in controlling the disease by means of soil disinfection are in progress.

4. *Helminthosporium on Ragi*.—This disease was not observed to be very prevalent during the year. Examination of diseased specimens and cultural studies of the fungus on different media to get at the perfect stage of the fungus were continued. The fungus brought into pure culture from specimens collected from different localities as well as cultures obtained from different parts of the plant such as, culms, leaf blades and earheads were mixed with one another and grown together on onion, oat and potato dextrose agars in petri dishes. Old culture of 2-12 months old on garden soil and on sterilised bits of ragi straw were periodically examined for perithecial formation. None of these were found to contain the perithecia.

The crop raised at the Hebbal Farm, during the last season with H22 and local Hullubele seeds disinfected with Ceresan and Abavit did not show any infection of the disease. The check plots also remained free from disease. This experiment with the disinfected seeds has been repeated during this season also. Two varieties, *viz.*, H22 and local Hullubele seeds have been treated with the following fungicides and sown on a $\frac{2}{4}$ acre plot on the Farm :—

Ceresandust.—At $2\frac{1}{2}$ ozs. a bushel of seed.

Ceresan Solution.—0.1% steeped for 1 hour and dried over night.

Uspulum Solution.—0.25% do do

Abavit B.—At 200 grams for 50 kgms. of seed. Germination was in no way affected by the treatment. The crop which is coming up well is under observation.

5. (a) *Benkiroga of Paddy*.—Germination tests of paddy seeds treated with the following proprietary fungicides were made with a view to try some controlling methods in the field by seed disinfection. The work was carried in the Paddy Breeding station at Nagenhalli :—

(i) *Wet Treatment*.—Uspulum solution. Seeds steeped in 0.25% solution for 30-60 minutes and dried before sowing.

(ii) *Dry Treatment*.—Abavit B. Seeds covered well with the dust at the rate of 200 gms for 50 kgms. of seed.

Ceresan. Seeds covered well with the dust at the rate of $2-2\frac{1}{2}$ ozs. a bushel of seed.

It has been observed that the germination of the seeds are not in any way affected by the above treatments. 86-92% of the disinfected seeds germinated. A small plot of paddy in which *Piricularia* had appeared was dusted with flowers of sulphur by a hand duster. The disease was controlled to a great extent.

(b) *Smut on Ragi*.—The growth of this fungus in cultures was studied. It forms but sparse hyphae on malt and potato-dextrose agars. The growth is better on potato-dextrose than on malt agar. The mycelium grows very well on oat-agar. In culture a few chlamydospores were noticed, but they were colourless and never attained the colour of the natural spores.

Inoculation experiments were tried on the earheads. The inoculations were done with (a) sporidial suspension from malt-agar culture about four weeks old, and (b) a suspension of chlamydospores in water. In both cases the inoculum was painted over the spikelets with a sterile camel hair brush. The seeds from these earheads have been collected and sown separately in pots as well as in small plots.

6. *Eradication of Seegade Sette in Paddy Fields*.—Experiments to control this common weed (*Chara*) in paddy fields were continued at Hampapur. Four big plots containing the weed were selected and treated with copper sulphate at the rate of 1 lb. for every 6,000 gallons of water contained in the plot. The solution was allowed to stand for 24 hours. This treatment is reported to be promising. With a second treatment as soon as fresh sproutings appear the weed can be effectively eradicated. This treatment has been taken up at an earlier stage of the appearance of the weed in a few paddy fields near Mysore with a view to see if a second treatment can be avoided.

7. *Alternaria on Potato*.—Cultural studies of the fungus were continued on potato dextrose, onion and oat agars in petri dishes to get at the perfect stage of the fungus. Cultures of over a year on sterilised garden soil and on bits of potato stem and leaves in flasks did not show any formation of perithecia. Spraying with calcium arsenate at the rate of 1 lb. in 50 gallons of water with lime-caseinate was demonstrated in few affected localities near Uttarahalli.

8. *Cardamom Diseases*.—Cardamom seedlings in the nursery were found to be seriously attacked by the "Katte" disease in Saklespur area. Nearly 60% of the plants were found to be attacked. The disease first makes its appearance early in June as tiny white spots on the leaves. These spots are surrounded by a water soaked area, and bear a few pycnidia. At a later stage, the entire leaf surface becomes spotted, the chlorophyll is destroyed, giving the leaf a chlorotic appearance, and finally the top leaves become curled up and rotted. Imbedded in the tissues are numerous pycnidia each with a definite ostiolum, and with numerous one-celled spores. Pure cultures of the fungus were obtained on potato agar, in which the characteristic pycnidia developed. The fungus has been found to be a species of *Coniothyrium*. Control measures are in progress. Another disease, found to be prevalent in the cardamom nursery, was caused by a *Corticium*, on which further work was taken up.

9. *Control of the Green Bug on Coffee*.—Experiments were carried out on the biological control of the Green Bug, which occur in scattered patches on Coffee estates. In nature the white fungus (*Cephalosporium lecaniizimm*), which parasitises the green bug, is found to be quite effective where it occurs during the rainy season. (It has been averred by some that the large scale spraying of Coffee against leaf disease, has proved to be detrimental to the effective natural spread of the white fungus on green bugs, but our experience of ten years' spraying has shown that the virulence of the white fungus has in no way abated on sprayed estates). Artificial spread of this fungus was attempted and has been found to be effective. One method of spreading the fungus is by tying up, in the bug-infested area, small leafy twigs, which bear the parasitised bugs. This method worked satisfactorily on one of the Giri estates. Another method, which was tried on a small scale, was by culturing the fungus and spraying the spores. This proved to be quite effective. It was reported that cultures of the fungus sent from Mysore through the Imperial Mycological Institute to the Island of Seychelles, effectively controlled the pest there.

10. *Coffee Leaf Disease*.—The teleutospore stage of this fungus which was reported by Marshall Ward from Ceylon nearly sixty years ago, and which generally has not been often met with, was found to occur in abundance on Coffee in Bangalore. It was found to be equally abundant on diseased material obtained from the Coffee estates. The formation of the teleutospores was noted to occur throughout the year except during the period of heavy rains from June to September. The spores germinated readily in water, within five hours forming a 4 celled promycelium on which the sporidia were borne. The conditions under which these spores are formed, and the possibility of the occurrence in nature of the aecial stage, are under study.

11. *Wood Rot of the Apple*.—The plants inoculated with a pure culture of *schizophyllum* obtained from diseased trees have not taken the infection. It may be that, as stated by some observers, there are other fungi involved in this trouble, and that *schizophyllum* is such a fast grower that it appears earlier than any other fungus on the stem. In spite of this the treatment that has to be applied to control the disease will be the same, namely protection of all cuts and injuries with white lead paint, since all wood rot fungi are known only to enter through wounds.

Root Rot of Apples.—The control measures advocated by this section, namely pulling out of dead and dying plants, and spraying the collar and roots with 1% Bordeaux mixture is finding favour. By these means the infection is controlled to a great extent.

12. (a) *Wilt or Damping off of Watermelons*.—The success that attended the previous treatment of the soil around the plants with 8-8-50 Bordeaux mixture led

us to repeat the treatment to a young crop. About 200 plants were treated in this manner when they were about a month old. No disease appeared in the treated plot, whereas in untreated plots the disease was rampant.

(b) *Potato Rhizoctonia*.—The disease was found prevalent in a big plot of about 4 acres at Doddabidarukallu on the Bangalore-Tumkur Road. The crop was in two stages one about 4 weeks old and the other about 8 weeks old. Sterilising the soil round the stem with 5 : 5 : 50 and 8 : 8 : 50 Bordeaux mixture were tried. The results have been satisfactory as the disease was successfully checked. The crop that was eight weeks old did not recover though the disease was checked whereas the younger crop recovered from the attack and gave a good yield.

13. (a) *Mildew on Orange and Peas*.—Mildew on orange was found to be rampant in many of the gardens. The damage is severe on young leaves and the green twigs, causing the leaves to curl up and affecting the normal growth. Very good control was obtained against mildew on orange in the Saklespur area, with gingelly oil Bordeaux. Over 1,000 plants were sprayed with, with the result that the mildew was observed practically to disappear after eight days. This treatment is being taken up on a large scale.

(b) *Mildew on Betel Vine*.—Spraying against this common disease on betel leaves is being gradually popularised. Arrangements were made to have few of the affected gardens near Tiptur, Gubbi, Pavagada and Arsikere sprayed with $\frac{1}{2}\%$ oil Bordeaux.

14. Amongst the important diseases noticed during the year mention may be made of phytophthora on potato. This disease was first observed on specimens received from Hoskote and the fungus was brought into pure culture. The disease is of late observed to be prevalent on the crop in other localities as well.

15. (a) *Miscellaneous*.—*Rhizoctonias* on *gori* and *ragi*, *vermicularia* and *gloeosporium* on chillies, *colletotrichum* and *gloeosporium* on betel vine are some of the diseases observed.

(b) Among noteworthy fungi observed during the year may be mentioned. *Diplodia* causing die-back of limes, Rust on Figs. and *Corticium* on Potato.

M. J. NARASIMHAN,
Mycologist.

REPORT OF WORK DONE IN THE ENTOMOLOGICAL SECTION FOR THE YEAR 1934-35.

SPECIAL INVESTIGATIONS AND DEMONSTRATIONS.

1. *Control of avare-pod* (*Dolichos lab.-lab.*) borers (*Adisura atkinsoni* M. O. and *Exelastis atomosa* Wlsm.)

The assisted demonstration in the control of the avare-pod borers that was carried out for several years in the districts was discontinued, as it was felt that, sufficient experience having been gained by the raiyats in the particular methods adopted, they would be fully able to undertake the control in their fields themselves.

Spraying experiments with bleaching-powder and a resin-soda-sticker in the control of the pests have yielded encouraging results. A net profit of Rs. 9-5-6 to Rs. 14 per acre is found possible to be realised by the raiyats by spraying their crop with a solution of bleaching-powder, by means of "Flit" sprayer, in small-scale experiments. The possibility of large-scale spraying is being investigated.

2. The potato *Epilachna* beetle.

Spraying with calcium arsenate against this serious pest of the potato crop has become more popular than last year. 142 pounds of the chemical were issued this year in Kolar and Bangalore Districts as against 72 pounds last year. This chemical was sprayed over a fairly large area of potatoes in collaboration with the Mycologist and it has been found to check the spread of alternaria disease as well.

3. *The red-headed hairy caterpillar*.—(*Amsacta albistriga* Wlk.)

As a result of a vigorous and continued campaign, this serious pest of early-sown crops in the Kolar district has been largely suppressed and is now only rarely noticed in small numbers in a few widely separated areas and the raiyats have been found to deal with the insect successfully without departmental help.

4. *Sugarcane borers*.—Propaganda work among the cane-growers in the canal areas of Mandya and Maddur in popularising the known borer control-methods was being done by the sectional Fieldman and a junior assistant entomologist. Practical demonstration of the borer control-methods was made in about 250 acres of the cultivators' area. Owing to the very limited staff more areas could not be taken up.

A training in borer control-methods was given to the Sugar Company's field staff, who have since been advising the raiyats in methods of control, namely, immersion of top-setts in cold water, trash-trapping of adult moths, cutting of "dead-hearts" and removal of white borer-moths and their egg masses.

Control by means of egg parasites.—The results of a systematic release of the egg parasites (*Trichogramma minutum*, Riley) reared in the Entomological laboratory at Bangalore in an area of about 2 acres in the Irwin Canal Farm at Mandya, have been fairly encouraging. The weight of cane obtained in the area where the parasites were released has been 35.2 tons per acre as compared with 27.2 tons in the control area. A difference of about 8 tons of cane per acre was therefore realised. Results of similar other small-scale experiments carried out in the Irwin Canal Farm have also been very marked. It has been found that the mere colonization of the laboratory-bred parasites, alone, did not give the maximum borer control, but other borer control methods adopted along with parasite colonization gave the best results.

With a view to control the borers by means of the egg-parasites, *Trichogramma minutum* Riley on as large a scale as possible in the cane areas of Mandya in addition to the usual borer-control measures adopted, a parasite-rearing laboratory was established at Mandya from the 1st March 1935. One of the junior assistants of the section was placed in charge. Two dozen shelves for host-moth breeding purposes were set up. A total of 1,000 parasite cards were produced at the Mandya laboratory. These supplemented by 239 cards sent from the Central Laboratory, Bangalore, representing a total of 1,282,365 parasites were released in different areas. The result of the releases was strikingly apparent in the areas, in point of vigour, growth, and scarcity of "dead-hearts."

An important advance in the control of two of the important borers that cause the greatest amount of damage to the young planted canes has been made. A very close study of the habits of the early stage larvae of these borers made it possible to devise a suitable cultivation method by which a very large percentage of the young larvae were killed before they are able to do any damage to cane seedlings. This method consists in the earthing-up of the rows of young cane seedlings as soon as a few borer-attacked plants (dead-hearts) are noticed in a field and a copious irrigation being given soon after. This method is very simple and capable of being adopted by all cane-growers. Practical demonstration of this method is being made in the raiyats' areas round about the Irwin-canal Farm and many of the cultivators have taken to this method of borer control in the early stages of cane growth.

5. *Coffee-borer*.—(*Xylotrechus quadripes* Chev.).

Fifteen acres of young badly infested coffee were treated in Manjarabad Taluk, Hassan District, with a high-boiling coal-tar-distillate emulsion. The emulsion was prepared in the laboratory with the help of the senior assistant chemist. The results in all cases have been encouraging, a saving of two-thirds of the plants in the treated area having been noticed. A quantity of the emulsion was sent on requisition to the Scientific Officer, United Planters Association, who treated a small area of infested coffee in Coorg but the area treated has not been large enough to give definite results. More of the material will be sent to him during the coming year for application on a larger scale. Steps are being taken with the help of the senior assistant chemist to standardise the emulsion and prepare a large quantity of the emulsion at a cheap rate. The control of the coffee-borer by means of the coal-tar-distillate emulsion is rapidly becoming popular with the coffee-planters. Arrangements are being made to treat about 100 acres of infested coffee representing all the coffee areas of the State during the coming season.

6. *Shot-hole borer of coffee*.—(*Xyleborus morastatti* Hag.).

The life-history studies of this insect are being continued with a view to find out an efficient remedy. A period of about 3 months in the year, March-June, has been noticed in which the beetles do not breed at all and arrangements are made to see if the removal and destruction of all infested twigs, now, would materially reduce the pest.

7. *Tobacco stem-borer*.—(*Phthorimaea heliopa*, Lower).

Large-scale demonstrations of spraying with a solution of Honge-oil resin soap, for combating the stem-borer, were conducted at Kadagodi and Krishnarajapura. The cultivators were further advised to root out and burn all the stubbles after harvest and reject and destroy all infested seedlings during transplantation. Investigations on the use of other materials for spraying against the borer, are continued.

The splitting open of the galls on the stem formed by the larvae in the plants, planted out in the fields, has been found to kill the insect and markedly reduce the pest. This operation has not been found to have any deleterious effect on the growth of the plants.

8. *Betel-vine earthworms and root-grubs of sugar-cane and areca-nut*.—An emulsion of carbon-disulphide as a soil fumigant was found successful in keeping down a severe earthworm infestation in a betel-vine garden. Large-scale tests with this material will be made in the coming season. Beetle grubs affecting roots of sugarcane and small areca plants were also successfully combated by this material. Three hundred young areca plants were treated against root-grubs by this material, in a garden in Kadur and most of the plants were saved.

9. *Eriophyes mites on Jasmine*.—(Local name Kakada.)

A serious loss of flowers and plants due to the attack of very minute mites causing velvety blisters on the leaves of this plant has been reduced, to a small extent, by the cultivators in Kolar and Bangalore districts by spraying with Hongey-oil-resin soap. As this treatment has not been found very satisfactory, dusting with flowers of sulphur in one acre was tried in a garden in Bangalore. The treated area has not been found to have any mite attack till now. Experiments are under way to find out the number of times sulphur dusting has to be done to completely keep the mites in check.

10. *Stored-grain pests*.—Demonstrations of fumigation with carbon-di-sulphide against the insects attacking stored-grain, particularly paddy and jola in Tumkur, Bangalore, Pavagada, Sira, Madhugiri and Chitaldrug were conducted.

A general survey and study were also made of four different kinds of beetles infesting ragi in underground cellars in Bangalore, Nelamangala and Magadi Taluks.

11. *Coffee Berry-borer*.—(*Stephanoderes hampei* Ferr.).

Definite identifications of coffee berry-borer beetles, collected in various coffee estates of Mysore and Coorg in 1930, have only recently, been received from the Imperial Institute of Entomology, London. Fortunately none of the beetles collected has been identified to be the same as the most destructive berry-borer beetle of Java (*Stephanoderes hampei*). It can safely be affirmed therefore, that this berry-borer has not established itself on coffee here till now.

12. *Plantain weevil*.—(*Cosmopolites sordidus*, Germar).

A serious outbreak of plantain disease in the Mysore district was investigated. The disease was found to be due to some fungi, but in most of the cases, this insect was also found associated with this disease. This insect is generally known to damage only the underground portions of the rhizome. In very severe infestation the pseudostem is also found damaged. Investigations are under way to find out whether the weevils are the primary cause of the fungus attack.

In the newly planted gardens the insect is always introduced by means of the suckers, the rhizomes of which, though apparently healthy are noticed to harbour a few weevils and their grubs. Soaking of the rhizomes of the suckers in cold water for 3 to 4 days has been found to completely kill all insect life in the suckers. Very healthy and vigorous plants have been raised from such water-soaked suckers and the percentage of plants killed on account of this treatment has been found to be very negligible.

13. *Bee-keeping*.—Owing to much propaganda work and the holding of short course summer classes in Bee-keeping, the public are showing increased interest in the subject. The section is unable to meet the increasing demand for bee colonies and bee appliances both from within the State and outside.

It has not been found possible to expand the work or even to very efficiently look after and give advice to the large number of people to whom the hives have been distributed. Want of staff and adequate funds for the bee-keeping section have mainly been the reason for the above state of affairs. Only 18 improved hives with bees have been distributed during the year.

Apiary in the Laboratory compound in Bangalore.—Very few swarms in nature could be collected during the year and the apiary had only very few colonies of bees.

Much progress has been made during the year in the increasing of the existing colonies by division, queen-rearing, weeding out of undesirable colonies, keeping a regular record of the history of the few hives in the Apiary. Observations on the developmental period of the different members of a bee colony have been made and it has been found that this period in the Indian bee, *Apis indica*, does not differ from that of the foreign bees, viz., Italians or Carniolans.

Apiary in Babbur Farm, Hiriya.—There has been a decrease this year in the number of colonies in this apiary due to swarming but the strength has been made good by the hiving of new swarms of bees. Proper manipulation of the bees at swarming time by a trained bee-keeper would have prevented the loss of many of the old colonies of bees in this apiary.

A short course in practical Bee-keeping was held in the apiary attached to the laboratory during the month of May this year. Twenty-four persons attended the course in addition to seven departmental fieldmen and three fieldmen deputed by the Assistant Director of Agriculture, Chikmagalur.

14. *Trials of fish poisons and other indigenous vegetable products as insecticides*.—Funds and staff were placed at the disposal of the Department by the Imperial Council of Agricultural Research, for a special investigation on this subject and the work was started in January 1935 and has been in progress since then. Evaluation of the insecticidal properties on various insects of eleven local plants has been made. The insecticidal values of the various chemical extracts prepared by the Chemist are being determined. Some of the species of *Tephrosias* are found to have more toxic properties than *Mundulea suberosa*, the plant on which the investigations have been going on in the previous years. None of the various plant products tried has been found to be stable, the toxicity being found decreasing with age.

Derris elliptica.—Root cuttings were imported from the Malay States and distributed for planting out in the various Government Farms in the State. A few of the cuttings are growing up into very healthy and vigorous plants in Marthur, Coffee-Farm, Balehonnur and Bangalore.

Publication.—Circular No. 53 "Sugarcane borers and their control in the Mysore State."

T. V. SUBRAMANIAM,
Entomologist.

REPORT OF WORK DONE IN THE BOTANICAL SECTION
DURING THE YEAR 1934-35.

I. *Ragi*.—A. (*Hain varieties—Hebbal Farm*).—On the Hebbal Farm the rain-fall during the cropping season was not favourable. 21.11 inches fell in 45 days and the yields were comparatively low.

Varieties.—Among the 15 standard varieties tested, Local Hullubele was found to be the best as in previous years. Gudubele (C. 8) has given just a little higher yield of grain during the year. The East African varieties have not been a success here. Since they are early ones they will be tested on the Kar Ragi Station at Hunsur. Out of 88 collections only four were better than the local Hullubele.

Selections.—Out of the 15 old pedigree selections—H. 13, H. 39, H. 18, H. 22 and H. 2 have given better results than the local Hullubele.

Only ten collections have given better yields than the local Hullubele among a group of 101 collections—

C. 383.	C. 627.	C. 623.
C. 426.	C. 642.	C. 466.
C. 362.	C. 616.	and C. 461.
C. 357.		

Results of selections handed over to the Hebbal Farm will be found in their report. H. 22 Ragi has been grown on a large area to provide good seed for the "A" farms next year. Over 100 acres have already been sown by the Hebbal raiyats for seed purpose. There is every likelihood of this area becoming the centre of good seed production.

B. *Hunsur—Kar Ragies*.—A total rainfall of 19.81 in. was distributed over 77 days as against 43.63 inches spread over 113 days in the previous year. (*Vide Statement 1.*) The season was not favourable for want of sufficient and timely rains. Sowings were done in the first week of May and the crops harvested in the middle of October.

Varieties.—Six new varieties were secured from Nasik, and Ratnagiri (Bombay Presidency). They do not make a good growth here.

Selections.—Twenty eight selections were tested in the plots and 87 new strains were sown in "Four Rows" test plots. In the plots H.K. 21, H.K. 5 and H.K. 8 have done well in a group of 16 selections. Among the old selections H.K. 13 and H.K. 25 gave good yields. K. 1 also has given favourable yields. Among the new selections H.K. 102, H.K. 122, H.K. 125 and H.K. 124 are quite promising. (*Vide Statement 2 to 6 A.*)

Bulk trials.—The following four have given over 120 per cent yield of grain over the local variety H.K. 5, H.K. 125, H.K. 102 and H.K. 122. (*Vide Statement 7.*)

Seed Distribution.—H.K. 13 and H.K. 82 (Bochanahally) have been multiplied and distributed to several places in the Kar Ragi area and both of them are becoming popular.

C. *Garden Ragi*.—K. 1 continues to be a popular garden ragi to sow in summer. During the Hain season even H. 22 ragi gives good yields. On the Irwin Canal Farm, selections from Coimbatore Millet Station are being tested but they are found to be late ripeners for the Kar season. Ear head selections made round Chamarajanagar are quite promising. (*Vide Statement 8 and 8 A.*)

D. *Malnad Ragi*.—M. 1 and M. 3 continue to be good on the Marthur Farm. Among the new varieties introduced from Nasik and Ratnagiri, two have done well and their performance will be watched.

Seed Distribution.—

Hain Ragi distributed from Hebbal	..	2,462 seers.
Kar Ragi do Hunsur	..	978½ „

II. *Paddy*.—The main work on paddy is now being carried on at the Nagenahally Paddy Breeding Station near Mysore. Varieties and manures are tested on the various farms to find out the special requirements of the different localities.

From April to December 1934 about 21" of rain were received at Nagenahalli distributed over 49 days as against 33.99 inches over 81 days in the previous year. (*Vide* Statement 9). July was dry and there was a long spell of drought between the middle of August to the beginning of October.

1. *Green Manures*.—Water was let in the channel during February and March and good crop of saunhemp was secured. Late sown crops were badly attacked by the moth. It was possible to give a general dressing of 1,500 lbs. per acre.

2. *Selection Work*.—Out of 45 selections in the plot trials 17 were retained for further trials and 32 new ones were taken up for critical observation. Thirty-four of the selections have given over 2,000 lbs. of grain against 1,958 lbs. of G.E.B. 24. A selection from Maharaja Bhogam, S. 657 heads the list with 3,150 lbs. per acre. (*Vide* Statement 10.)

3. *Paddy Varieties*.—In all 242 varieties are under observation. A collection of 45 varieties was obtained from the Kanjat Rice Breeding Station of Bombay and Nasik. Dusi Sanna, Maharaja Bhogam, Bile Bhatta, Balarambhogam and Natana halli have given better results than G.E.B. 24. The highest yield was with Maharaja Bhogam $4,002 \pm 290$ lbs. of grain per acre. (*Vide* Statement 11.)

4. *Breeding Work*.—Many selections have been made in the segregates of the G.E.B. crosses in the F. 3 generation. Some of them combine the good qualities of straw, fine grain and early maturity with a good stand. A large number of seeds obtained by crossing G.E.B. 24 with seven other varieties have been sown and further hybridization work will be continued.

Manurial Experiments.—(*Vide* Statements 12 and 13.) The details will be found in the Agricultural Chemist's report. Applying heavy doses of artificial manures do not seem to pay at the present market rates. Heavier doses do not increase the yields proportionately and the losses are heavy—

1. *Standard mixture*.—

						Grain in lbs. per acre.	Losses. Rs. a. p.
Check	..	..	..	..	..	2978 ± 276	....
Single dose	..	..	..	..	..	3350 ± 215	— 9 15 7
One and a half dose	..	..	..	..	..	3533 ± 157	— 16 11 0
Double dose	..	..	..	..	..	3618 ± 62	— 24 11 9
Two and a half dose	..	..	..	..	..	3650 ± 115	— 36 13 0

2. *General Manurial Requirement*.—Nitrogen and Phosphoric acid plot has given the best yield. Phosphoric acid seems to be necessary. Even the small doses result in losses now.

						Grain in lbs. per acre.	Losses. Rs. a. p.
Check	..	..	..	..	..	2763 ± 213	....
Nitrogen	..	..	..	..	..	2968 ± 184	— 0 5 10
Nitrogen Phosphoric acid	..	..	..	..	..	3221 ± 300	— 2 5 5
Nitrogen—Potash	..	..	..	..	..	2864 ± 395	— 6 4 5
Nitrogen—Phosphoric acid—Potash	..	..	..	..	..	3136 ± 35	— 6 4 4

3. *Various forms of Nitrogen*.—Ammonium sulphate has given the best results and has given some profits.

						Grain in lbs. per acre.	Losses. Rs. a. p.
Check	..	..	..	..	..	2711 ± 509	....
Calcium Cyanamide	..	..	..	..	..	3031 ± 16	— 13 14 8
Sodium Nitrate	..	..	..	..	..	2861 ± 151	— 19 12 9
Ammonium sulphate	..	..	..	..	..	3459 ± 462	+ 6 8 4
Groundnut cake	..	..	..	..	..	2806 ± 362	— 16 13 11

4. *Phosphoric acid in different forms*.—Superphosphate seems to be superior to steamed bone meal. In both cases there are losses.

						Grain in lbs. per acre.	Losses. Rs. a. p.
Check	..	..	..	..	..	2503 ± 311	....
Superphosphate	..	..	..	..	..	3007 ± 163	— 1 11 4
Steamed Bone meal	..	..	..	..	..	2810 ± 471	— 7 15 9

5. *Phosphoric acid in different doses.*—N to P_2O_5 in the ration of 1 : 3 has given the highest yield. There is loss in every case.

	Grain in lbs. per acre.	Losses.		
		Rs.	a.	p.
Check	2657 ± 163	—	9	1 6
30 lbs. N + 45 lbs. P_2O_5	2946 ± 374	—	10	11 0
30 lbs. N + 60	3064 ± 9	—	8	3 11
30 lbs. N + 90	3273 ± 96			

Seed Distribution.—The quantity of seed paddy distributed from 1st July 1935 to the end of June 1935 was as follows. The demand is very much more than what we can produce

1. G. E. B. 24	15,638 seers.
2. Important selections	15,395 „
3. Other selections	4,503 „
4. Varieties	43 „

Pests and Diseases.—Owing to the dry season pests and diseases were common. Grasshoppers, case worms, paddy blasts and *Kari Kaddi* roga were the main ones. In spite of these, the yields were good.

Hebbal Farm.—No summer paddy was grown as the tank was dry. The demand for summer paddy varieties was very great during the season but there was no seed for distribution. Three centres seem to be quite essential for the production of summer varieties,—one in Kolar District, one in Tumkur and one under the Vani Vilasa Sagara. Unless a steady supply is maintained it is extremely hard to meet the demand. The tanks get filled at various times and the demand is erratic. The following varieties may be multiplied for these areas :—

Basumathi, Halubbalu, Kempuraja and Chinthamani Sanna.

Gunasale has given the highest yield in the monsoon season. In Gunasale S. 268 has given good yields on the Nagenahalli Paddy Breeding Station and it will be multiplied.

Babbur Farm.—S. 547, Kempuraja and Halubbalu do very well as summer crops. These and Basumathi will be multiplied here for further distribution. In case a monsoon supply is made, then the following varieties will be distributed :—

S. 246, S. 268, S. 363 and G.E.B. 24.

Hunsur Kar Ragi Breeding Station.—S. 139 and S. 67 have done exceedingly well here giving 20 per cent over the G.E.B. 24 paddy and they will be given out for preliminary trials.

Marthur Farm.—The improvement of malnad paddies is a very complicated problem. In the first instance, the local seeds were all badly mixed with various types. They were purified and pure strains obtained. Secondly, sowing is the common practice in the malnads and most of the fields are badly water—logged and heavily inundated. At the heads of valleys and slopes of hill sides, some transplantation is also done. Here the season is late. While sowing is usually done in May, transplantation is made in July or August. Thus, varieties are required to grow under these varied conditions. Without proper trials and necessary observations G.E.B. 24 was given out for distribution. On account of its fine quality, high milling percentage and the higher price it fetches, the variety has begun to spread in the malnads. The coarser varieties have a definite market on the west coast and displacement by the finer sorts might mean the loss of the market. The malnad varieties are said to be decidedly superior to the finer sorts in their nutritive value. In the malnads there is no legume and the people depend mainly upon rice. The quantity of pulses used by them is quite negligible. If the finer sorts get under extensive cultivation, there is the danger of malnutrition of the people who are already subsisting on a very low quality of diet. Their build, health and body weight clearly show the quality of their daily rations. Before any further attempt is made to extend the cultivation of finer rices it is quite essential to make a thorough study of the major varieties of rices like Walya, Togarina, Bhawe and Jaddu along with G.E.B. 24 grown in that area.

In the malnads the question of fodder is also an important one. G.E.B. 24 does not produce much straw. The new selections which are now being multiplied for general distribution give good yields of both straw and grain. The most promising

ones are W. 3629, W. 529, H.B. 829, H.O. 529, H.B. 1529, D. 329, T. 129 and Si. 1329. (*Vide* Statement 14 and 15.)

Out of the large collection of paddies got from Karjat, a large number which are early ripeners are quite unsuited to the malnads. A variety that is sown in May must flower in October and ripen by December to produce the biggest yield of grain and straw. Such ones will also escape the period of late rains and produce good quality of grains. Some varieties like 11 M Burina, Ramasal, Assam and a selection of Karjat are very promising from the point of yield of grain and straw. (*Vide* Statements 15 and 16.)

Laboratory Investigations.—Various *Cassias*, *Calotropis*, *Hogne* and *Lantana* are being tested as green-leaf manure. Two tons of *lantana* with a mixture of Am. sulphate and Super seem to produce high yields. Very valuable results have been obtained in these experiments on the Hebbal Farm during the last three seasons.

On the paddy breeding station an attempt is being made to note the percentage of rice to grain of all the rices and also to study the cooking qualities of rices. Further, the suitability of the various important varieties for making pop-rice, beaten rice, and puffed rice, is being tested as most of the Kembuthi and Kaddi paddies are imported into the Bombay Presidency for these purposes.

The paddy bloomer apparatus has been a great success and its use in the hybridization work will be more common hereafter.

Sugarcane. Breeding work was continued on the Hebbal Farm and on the Irwin Canal Farm, Mandya. Laboratory investigations were conducted at the Central Laboratories.

This is the third year of the operation of the Scheme which was sanctioned by the Imperial Council of Agricultural Research, for extending the work on the breeding of thick canes in Mysore State, (Order No. 148 Agri., dated, New Delhi, 16th January 1933.) The additional staff and cost of the X-ray apparatus is paid by the Imperial Research Council. All other items of expenditure are met by the budget allotment made for the Botanical Section.

HEBBAL FARM.

1. *Exotic canes.*—Detailed study of 56 varieties of canes was undertaken. The best yields were :—

Variety.	Per acre.	
	No. of canes.	Tonnage.
P. O. J. 2727	39,306	24.0
P. O. J. 213	35,200	27.0
P. O. J. 33 a -striped	31,240	27.8
P. O. J. 33 a-o-o-1	32,120	29.0
H. M. 320 (Check)	15,840	17.8

(*Vide* Statements 17 and 18)—(area of plots 330 sq. yds.)

2. *Indigenous Canes* :—Seventy canes were studied in detail with regard to vigour, tillering capacity, flowering habit, pith formation, brix content and tonnage. Hubli grass cane gave 33 tons to the acre, Bangadya 13.7 tons, Red cane Manjri 17.3 tons and Thambda Khanapur 11.4 tons. The yields of others were below 10 tons. (*Vide* Statement 18.)

3. *Seedling Canes.*—The performance of some Coimbatore, Java and Hebbal seedlings are given below for comparison :—

Medium Canes.

Coimbatore Canes.	Per acre.	
	No. of canes.	Tonnage.
Co. 281	34,320	14.2
Co. 290	44,880	25.1
Co. 313	37,546	19.9
Hebbal seedlings.		
H. M. 603	26,112	17.8
H. M. 606	25,813	18.7
H. M. 609	27,904	22.9
H. M. 610	17,013	9.8

Thick Canes.

Coimbatore Selections.

Co. 408	..	..	..	..	..	17,306	11·6
Co. 411	..	..	..	..	..	25,666	18·7
Co. 401	..	..	..	..	..	7,480	9·1

Java Canes.

P. O. J. 2727	..	..	..	..	..	39,306	24·6
P. O. J. 2878	..	..	..	..	..	18,480	10·2
P. O. J. 2883	..	..	..	..	..	19,213	16·6
E. K. 23	..	..	..	..	..	17,600	22·2

Hebbal Seedlings—(Water logged area).

H. M. 320	..	..	..	..	..	17,969	24·0
H. M. 544 striped	..	..	..	..	..	41,650	22·84
H. M. 544	..	..	..	..	..	39,865	23·5
H. M. 500	..	..	..	..	..	17,136	26·2

General Remarks.—All the exotic canes including Coimbatore varieties Co. 291 and Co. 281 flower early resulting in poor vegetative growth. In consequence, the tonnage is decreased and pith formation increases. Of the well known indigenous canes, particularly Coimbatore varieties flower very early. H.M. 320 did well at Hebbal Farm. Of the new canes H.M. 607, H.M. 609, have done well. H.M. 602 showed again 26·28 per cent brix. This is a late maturing cane, and never flowers. In the test plots on the Hebbal Farm the tonnage went up to 45. Failure of monsoon rains and difficulties in adequate irrigation are the prime causes for the poor performance of all the varieties. The germination and tillering capacity of all the canes and their monthly growths are under observation.

New Introductions.—The following new canes were introduced :—

Indigenous Canes.

Origin.

Co. 408	..	..	..	..	..	Coimbatore	
Co. 412	..	..	..	..	..	..	Received from
Co. 413	..	..	..	..	..	..	Coimbatore.
Co. 417	..	..	..	..	..	..	
Co. 418	..	..	..	..	..	..	

Distribution of Sugarcane Setts.—Nearly 63,500 sugarcane setts were distributed both inside and outside the State during the year under report.

H.M. 320, H.M. 487, H.M. 500, H.M. 607, H.M. 608, H.M. 609, setts were despatched to Bellary, Madras, Bihar besides to places inside the State.

Varietal Tests.—1. Hebbal seedlings tested against local Pattapatti in clayey loam soils :—

Varieties.	Per acre.	
	No. of canes.	Cane Tonnage.
Local Pattapatti—Check	..	9,000 13·3
H. M. 500	..	17,136 26·2
H. M. 544	..	39,865 23·5
H. M. 544 striped	..	41,650 22·84
H. M. 320	..	17,969 24·0

2. Hebbal medium canes—four—were tested against H.M. 320, in good clayey loam soils but slightly water-logged.

Variety.	Per acre.	
	No. of canes.	Cane Tonnage.
H. M. 320—Check	..	20,224 23·4
H. M. 602	..	30,208 21·0
H. M. 603	..	26,112 17·8
H. M. 609	..	27,904 22·9
H. M. 607	..	12,800 23·6

3. One Hebbal seedling cane and three Java canes were tested against H.M. 320 in clayey loamy and water-logged soils :—

Variety.	Per acre.	
	No. of canes.	Cane Tonnage.
H. M. 320—Check	..	9,344 14·5
P. O. J. 2878	..	22,144 13·7
E. K. 28	..	16,512 12·2
P. O. J. 100	..	16,896 14·6
H. M. 606	..	16,896 22·1

Botanical Section.

New Seedlings.—Out of the 707 selections made from seedlings raised during 1932-34, nearly 50 per cent were discarded and the rest after a careful selection were planted at Hebbal and at Irwin Canal Farm. Some very good and promising canes have been selected from P.O.J. 2878, Co. 313 and Co. 281. Nearly 10,000 seedlings raised from seeds, and grown in the nursery at Hebbal were transported to Irwin Canal Farm for planting. Out of these nearly 400 have been selected for further study. Most of the selections were made from P.O.J. 2878, P.O.J. 2883, P.O.J. 2727, P.O.J. 213, E.K. 28, Co. 281 and Co. 313 and B. 6346.

Root Study.—The study of the development of root system of the following varieties was undertaken :—

Nutrition Experiments.—Owing to scarcity of water supply, these experiments were discontinued temporarily.

X-Ray Work.—Local Pattapatti and H.M. 544 striped, were the canes primarily used for irradiation. Last year's irradiation has yielded over 42 per cent mutants. Single eye-bud setts of Pattapatti, after irradiation and planting, have in many cases produced mutants of several colours—*Viz.*, White, Red, Orange and partial striped. The vigour of the canes has also been affected. Local Pattapatti which rarely flowers at Hebbal has also been induced flower. Production of such mutants by X-Ray, opens up a new line in breeding work. With further research and controlled irradiation, one may reasonably expect to produce mutants of economic value. A paper on the effects of X-ray irradiation on sugarcane will be published shortly.

X-ray irradiation is now being tried on the following varieties :—

Batjan, Bhangadya, Striped Rasathali, Striped Mauritius, Red Mauritius, Striped Tanna, Striped H.M. 320, Purple Mauritius, H.M. 601 Striped, H.M. 500 striped and H.M. 89. In addition to the above, irradiation is being tried on some horticultural plants, paddy and groundnuts.

Diseases.—Borer attack is much less than last year. Improved methods in earthing up eradicated the borer almost completely.

(IRWIN CANAL FARM.)

(Botanical Section.)

Exotic Canes.—Fifty-six varieties were again planted for study.

Indigenous Canes.—Ninety-five varieties grown here were studied for their brix, pith formation, tonnage, etc.

General Remarks.—All the varieties did better here, although they flowered much earlier.

Variety.	Tonnage per acre.	
	Hebbal.	Mandya I.C.F.
H. M. 320	24.0	38.5
P. O. J. 2878	13.7	20.17
E. K. 28	12.2	21.17
B. 1528	11.4	21.12
D. 1135	18.0	22.7
Co. 290	25.1	28.0
Co. 402	21.6	20.0
H. M. 606	18.7	28.9
H. M. 607	23.6	36.4

H.M. 608 did very well here, and never flowered. In consequence of its very high sucrose content and good performance, this variety was multiplied on a large scale.

P.O.J. 213 × H.M. 544. Seedlings (H.M. 612—H.M. 630). The ratoons of these canes are very promising. Of these H.M. 614, 619, 627, 628 and 629 are selections. H.M. 612, H.M. 613 are multiplied on a large scale. Several other selections are planted in different spatial arrangements, to observe their performances.

Seasonal Planting.—H.M. 320 is used for seasonal planting. Last year's observation on the question of borer attack and effective time for planting is confirmed again.

Seasonal Planting of Important Varieties.—Twenty-four important varieties selected from World Canes were planted in four-row tests during November, December and:

January. December planting gave the best results. Some of the important results were as follows :—

	November.	Planting in December.	January.
P. O. J. 2878	27.40	41.50	20.50
H. M. 629	51.25	57.25	32.25
H. M. 609	44.50	57.25	28.75
H. M. 607	37.67	40.45	36.40
H. M. 606	39.50	42.00	28.50
H. M. 320	46.05	53.00	45.18

(For details *Vide* Statement Nos. 19 to 21.)

Central Laboratories.—Varietal, histological, morphological and cytological studies of important canes are in progress.

IV. *Groundnut*.—Seventeen spreading varieties of groundnuts were tested. Local Sogatur gave 1,258 lbs. of pods per acre. Only Mozambique has given 1,355 lbs. of pods per acre giving a little over the local one.

Thirteen erect varieties were tested. All of them have given more than 1,000 lbs. of pods per acre. The highest yields have been given by the following :—

H. G. 1	1,360 lbs. pods per acre.
African Red	1,190 ..
H. G. 2	1,360 ..
Spanish	1,393 ..

Twenty-two plant selections were under observation and three of them have given yields of over 1,100 lbs. of pods per acre. They are only kept up for maintaining pure strains of the varieties.

Strains from the various hybrids.—In all about 284 strains were under observation. Some of them are promising and they are being multiplied. The small-seeded pigmy types are vigorous growers and they are being multiplied for fodder. In every case the dark green leaved varieties resist the “*Cercospora*” disease whereas the light green leaved ones like Small Japan or Spanish are heavily attacked.

H.G. 1.—This strain is spreading widely in the State. As a summer crop on the Irwin Canal Farm over 40 pallas were gathered. On the Marthur Farm also it has done well and resisted the leaf spot disease *Cercospora*.

The new *Arachis* namely *Nambyquara* a variety of oil-seed similar to groundnut is being multiplied at Bangalore. This has been successfully crossed with several varieties of groundnuts.

V. *Cotton*.—During the year four species of wild cottons were obtained from America by Mr. V. N. Ranganatha Rao. They were germinated in the boxes and planted in Bangalore. Many plants of Karachi wild cotton also are growing here. They form valuable material for crossing work. They are said to possess only 13 chromosomes. With their aid attempts will be made to cross the Asiatic varieties of 13 chromosomes. N.T. Cottons from Punjab, Gaorani from Hyderabad and several varieties from Coimbatore were introduced and they are now growing both at Babbur and Bangalore.

In the varietal tests on the Irwin Canal Farm very interesting results have been obtained. With M.A. II and N.T. 33 more than 1,000 lbs. of seed cotton have been picked before December. If the crop is allowed to remain on the ground as much as 1,500 lbs. of seed cotton can be gathered in M.A. II. If the crop is sown early in June or in May after rains, such heavy crops could be harvested. Early ripening ones are not suited to this area. More than half of the supply of 52,000 bales of cotton required by the Mills in Mysore could be secured in the Irwin Canal area alone if the cultivation is extended there.

Seasonal Conditions (Babbur Farm).—The season especially for cotton crop was rather bad throughout. As the rains were received late in the year most of the area which should have been sown under cotton was sown with Jola. A total rainfall of 15.57 inches was received against 38.78 inches of last year. The heavy showers of *Hingar* were received in the month of October. The sowing of cotton in dry-land was taken up in the third week of the same month. The crop suffered to a considerable

extent during the growing period. Hardly one inch of rain was received (*Vide* Statement No. 22). On account of drought there was a very poor crop during the year under report.

As in previous year some more collections of both indigenous and exotic cottons were made during the year.

A. Sannahatti. Hundred and twelve pounds of pure Sel. 69 raised by this Section was handed over for further multiplication to the Farm Section. As the crop in general was poor, only 18 maunds of pure seeds have been given by the Farm in turn to the "A" Seed Farm through the Assistant Director of Agriculture, Shimoga. As in previous years there was a ready demand for the Sel. 69 seeds and lint on the market and it continued to maintain its reputation. Besides Sel. 69 seventy pounds of pure H. 190 were also handed over to the Farm for bulk trials along with Sel. 69 and for multiplication.

Work on Wilt Disease.—Individual plant selections sown in line culture were studied in detail. Selections of highly resistant types have been made amongst these and they will be further studied. Eight varieties were sown both in Latin-square method and strip-method to test their individual performance. Detailed observation and record was made of all the wilt affected plants in the former. The result of the harvest and percentage of wilt attack is furnished in Statement 23.

From the observations made, Jayavant was found to be the least affected by the disease and H. 190 to be a highly susceptible one. Two strains namely 69-70 and 76-77 resist the disease better than either Sel. 69 or H. 190 but their yield is very poor. In order to get heavy yielders out of these, individual plant selections are being made. Further crosses with heavy yielding types will also be made in the ensuing season.

Test of Hybrids. (Arboreum Cross (G.A. × G.H.).—Out of 74 strains in the line culture, further plant selections have been made during the year. As in previous years the three best strains of Arboreum-cross were compared with Local Sannahatti, Sel. 69, Sel. 69-1, Sel. 69-3 and Nadam both in the strip method as well as Latin-square methods. The results are furnished in Statement 24.

Three strains namely Nadam-like 21-22, 149-152 and H. 190 were also given out for trial on an experimental scale to some of the ranges in Shimoga and Mysore Circles. Owing to adverse seasonal conditions they could not be sown in most of the places.

The previously mentioned three strains of Arboreum Cross were sent to the Technological Laboratory, Matunga, along with Sel. 69, Sel. 69-1 and Sel. 69-3 for spinning test. For report made by the Director on these cotton samples, *vide* Appendix I.

II. Nadam-Cernum Crosses. Hybrids of this were sown both in wet-lands and in the dry lands. A number of plant selections have been made in both the places.

Hybridization Work. An attempt to bring about a cross between local Sannahatti and exotic-cottons was made but without much success.

B. Exotic Cotton.—The report on these samples by the Technological Laboratory, Matunga, is furnished in Statement V. Eleven varieties including Mysore-American strains were tested under irrigation by the latin-square method and their relative performance is furnished (*Vide* Statement 26).

Since M.A. II continued to maintain its rank in point of yield and other economic characters the same was distributed to the raiyats on a large scale during the year under report (Appendix II).

A new experiment was started this year in wet-lands in order to find out the season best suited for sowing exotic cottons and also to investigate how far it pays to grow Sannahatti under irrigation. For this purpose two exotic cottons namely Local Doddahatti and M.A. IV. 204-208 (a cross between G.H. × G.P.) together with Sel. 69 were selected. These were sown almost every fortnight (as conditions permitted). The dates of sowing and the yields recorded in the season have been tabulated in Statement 25.

C. Singapur Farm.—About 20 acres of land have been brought under cultivation as against 12 acres in the previous years. All exotic and Mysore-American hybrids are being studied. Eleven varieties were tested for yield under Latin-square method and their relative performances have been tabulated (*Vide* Statement 26). Of these eleven varieties, M.A. II and M.A. I Black seed have proved very good.

The following are the new collections that have been received for testing on the Farm :—

- | | | |
|-----------|-------------|-------------|
| 1. Sakel. | 2. N.T. 36. | 3. N.T. 38. |
|-----------|-------------|-------------|

In the laboratory, preliminary work in the study of the Red Leaf disease has revealed interesting facts. On the whole the observations so far made show that the disease seems to be present in the plant itself and that different varieties resist it to different degrees. Some of the varieties are highly susceptible to it. Budding a number of varieties on the same plant on different branches has clearly shown that neither the root system nor the soil conditions are responsible for the disease. When all the buds sprout and grow on the same root stock we find the varieties reacting differently to the red-leaf disease. After the scheme now* before the Indian Central Cotton Committee is sanctioned these investigations will be continued.

VI. *Jola*.—Collection of different varieties of Jola numbering 81 were grown in line-cultures as in previous years. Sixteen promising varieties were sown in test-plot for comparing yields. The result of the harvest is furnished (*Vide* Statement 27).

VII. *Potato*.—Seedling potatoes raised on the Hebbal Farm were under observation. About 24 of them were planted along with several new seedling selections. Of the types resistant to the ring disease 5 B.T., Sel. 384, Sel. 284 and B.Q. 39 have given fair results. The Assam varieties have given moderate yields. Their performance will be noted in the next season. Many of them flowered during the season but did not set fruit.

On the Irwin Canal Farm heavy yields of potatoes can be obtained during the monsoons and before the heavy rains of October, but it is very difficult to preserve the seed tubers during summer. If a continuous seed supply is made from outside it is likely that this important food crop may become popular in that area.

VIII. *Castors*.—All the 30 selections and the 54 collections were sown both at Hebbal and at Hunsur. In Hunsur the growth is good but the attack by pod borers is very heavy. The growth on the Hebbal Farm is fair if sown in July, but good crops can be obtained by early sowing in April or May.

IX. *Fodders*.—*Teosente* and *P. purpureum* have been multiplied. The indigenous grasses have been maintained. *Sorghum* amber selections were multiplied.

X. *Introduction of new crops*.—This work is in progress on the Irwin Canal Farm. The following crops have been found to be the best among the varieties so far tested.

1. Wheats—P. 52 and P. 101—sown in September and harvested in January.
2. Oats—B. S. No. 1, B. S. No. 2 and hybrid J. sown in September and harvested in January.
3. Barleys—Sown in September were all failures.
4. *Togares*—T. 80 and 82 continue to yield well. September to April.
5. Bengal gram—T. 58, T. 25 and T. 17—Sown in November and harvested in April.
6. *Saf-flowers*—Except T. 30 spineless, others failed—September to January.
7. Linseed—Hyb. 21, T. 124 and T. 12—September to January.
8. Sesamum—All types sown in September failed.

X. *Tobacco*.—Seven varieties were tested of which Pusa hybrid 177 has given the best yield on the Irwin Canal Farm.

On the Hunsur Station among the selections made from the Bettadapur tobacco, Chaulkudi has given the best yield. Among the exotics Pusa hybrid has given the best yield. Harrison Special grows well but the yields are not high and the cured leaf of this variety is not liked by the people. (*Vide* Statement 47).

Three good varieties of cigarette tobacco were introduced from the U.S.A. They are making very satisfactory growth on the Hebbal Farm.

During the year a careful watch was kept over the behaviour of Harrison Special variety in the fields round about Whitefield and Varthur. The variety is highly unstable and splits freely. Especially the locally collected seed is thoroughly unreliable on account of this fact. Even the seed from Chirala has a tendency to split to some extent. Fresh stock of seed should be imported annually to keep up the good quality of the leaf. But such a practice is not desirable. Plant selections should be made out of the pure stock every year, flowers bagged and sufficient seed gathered to meet the local demand. To depend upon an unacclimatised supply of seed is not proper and very dangerous. If the industry is to prosper, immediate arrangements should be made to start seed plots under strict technical supervision where not only the characters of the varieties are maintained by selections but also the nicotine content kept under control by careful testing.

Laboratory Work.—Mr. K. Shama Iyengar, B.Sc., Mr. Tatachar, B.Sc. (Hons.), Mr. Vyasaraaja Rao, B.Sc. (Hons.), Mr. Srikantiah, B.Sc., Mr. K. Gopal Iyengar, M.Sc.,

* Since Sanctioned.

and Mr. G. Srinivasa Iyengar, M.Sc., are working in the laboratory on various problems connected with Sugarcane and cotton research. All the ragies, jola, tobacco and paddy seeds required by the Department were tested in the laboratory during the year. This Section has become very popular.

I take this opportunity to acknowledge the help given by the staff and the students.

V. K. BADAMI,
Deputy Director of Agriculture.

Botanical Section.

REPORT OF WORK DONE ON THE GOVERNMENT EXPERIMENTAL FARM, HEBBAL, FOR THE YEAR 1934-35.

Seasonal Conditions.—The rainfall during the calendar year was 26.67 inches distributed over 59 days as against 36.32 inches in 70 days in the previous year. During the cropping season 21.11 inches fell in 45 days. The season on the whole was not very favourable to the crops.

DRY LANDS.

1. *Ragi and Groundnut Rotation.*—The field did not receive any manure. H. 22 ragi was sown on 27th June 1934 and harvested on 11th December 1934. Groundnut H.G. 1 was sown on 21st June 1934 and harvested on 7th January 1935. Both in straw and grain, plots of ragi grown after a crop of groundnut gave better results than the plots where ragi is grown year after year (*Vide Statement 28*).

2. *Green Manuring the dry lands with cowpea and sannhemp.*—During the year, sannhemp has given the best results both in sown and transplanted plots. The ragi used for seed was H.K. 13. The experimental plot was sown on the 9th August 1934 and harvested on 11th December 1934. The ragi was sown in the nursery on 6th July 1934 and transplanted on 9th August 1934. It was harvested on 11th December 1934.

3. *Ragi Manurial Experiments.*—The whole area received a general dressing of 10,000 lbs. of farm yard manure per acre. The field was sown with H. 22 ragi. The rotation is ragi after ragi and this is the general practice in this area. (*Vide Statement 29 and 30*).

Combination of ammonium-sulphate and Super and KCL in higher doses of nitrogenous manures have given better results than mere Am_2SO_3 or NaNO_3 this year. It appears that complete manures are necessary for securing better results. Ammonium sulphate seems to be better than sodium nitrate.

Ragi Varietal Tests.—(a) In one group six varieties were tested this year against local Hullubele. Only H. 22, H. 32 and H. 39 have given higher yields, viz., 33.7%, 15.1% and 8.4% respectively than the check. As the varieties H. 45 and H. 55 were only introduced two years ago their average yields for only three years (*Vide Statements 31 and 32*) is given.

(b) In the second group three new selections were introduced for the last two years viz., H. 22 and H. 45, H. 55, in addition to H. 71, H. 73 and H. 77, tested against the check. The result showed that H. 22, H. 71 and H. 77 have given better results than the check (*Vide Statement 5*).

Seed drill tests.—Different kinds of seed drills were used in sowing the ragi to test the efficiency of the implement. Four drills namely—(1) Country, (2) Lift, (3) Disc, (4) Vertical. To gauge the efficiency of the drill, they will have to be used for some more seasons. Lift drill has given the best results and the Disc drill has given nearly as good a result as the Country drill. Country drill has given the highest yield of straw. (*Vide Statement 33*).

GROUNDNUTS.

Manurial Experiments.—The experiment is laid down in two series, limed and unlimed. The whole plot received a general dressing of 5,000 lbs. of farm yard manure per acre. The plot was sown with H.G. 1 variety. The highest yield was obtained in limed portion with complete manure during this season (*Vide Statements 34 and 35*).

(b) (i) *Varietal Experiments.*—The experiments were conducted in latin-square method in three series with Mauritius variety as check, and each series contains five varieties. Farm yard manure was applied at 5,000 lbs. per acre. Out of these varieties Big Japan has given the highest yield and local the lowest (*Vide Statements 36 and 37*).

Bulk Plots.—Seven spreading varieties and two erect varieties were grown and yields are appended below. Five thousand lbs. of farm yard manure per acre was applied to the fields.

WET LANDS.

Paddy.—(i) *Manurial Experiments.*—(a) Different kinds of oil-cakes were used in combination with superphosphate or bonemeal. The whole area in C. and D. Ranges received a general dressing of hongey leaf at 3,000 lbs. per acre. The check plots in B Range have received only hongey leaf. (*Vide* Statement 38). This year castor cakes and super plots have given the highest yield. Gunasale paddy was sown for these trials.

(b) *Artificial Manures.*—In addition to artificial manures, hongey leaf at 3,000 lbs. per acre as against 1,500 lbs. of last year were applied to the plot. The result shows that the double dose of super, ordinary dose of ammonium sulphate with organic matter has given the highest yield. (*Vide* Statements 39 and 40).

(ii) *Varietal Tests.*—The varieties were tested both in the strip and chess board methods, 10,000 lbs. of farm yard manure and 100 lbs. of Am_2S_4 per acre were given to the plots in addition to 300 lbs. of superphosphate. (*Vide* Statement 41). Gunasale has given the highest yield in both the methods this year also.

SUGARCANE EXPERIMENTS.

I. *Varietal Tests.*—Group I.—Farm seedling canes and local Pattapatti were tested against H.M. 320. Pattapatti and all the rest were soft thick canes. H.M. 500 has given the highest yield. (*Vide* Statement 42).

Group II.—Four medium canes were tested against H.M. 320. As H.M. 605 and H.M. 604 were found to be poor in quality, they were discarded last year and were replaced by H.M. 607 and H.M. 609. H.M. 607 has given the highest yield. (*Vide* Statement 43).

Group III.—The following seedling canes were tested against H.M. 320 as check. H.M. 606 and H.M. 608 have given good tonnage, H.M. 608 has given the highest yield and this is the first year of the trial for these canes. (*Vide* Statement 44).

II. *Manurial Tests.*—H.M. 320 cane was planted in the manurial experimental plots. This year the groundnut cake and artificial fertilisers were applied either alone or in combination in different doses. The results show that the highest yield was obtained by applying 3 cwts. of super with one ton of groundnut cake. (*Vide* Statement 45).

III. *Cultural Experiments.*—H.M. 320 canes were planted. The results of the experiments this year also show that non-removal of tillerings gave larger number of canes but the yield was slightly higher in the case of the removal of tillerings. (*Vide* Statement 46).

SEED DISTRIBUTION.

The following distribution of seed and sugarcane setts was made during the year

1. Sugarcane	..	..	..	..	..	..	63,246 setts.
2. Paddy	..	..	..	..	..	..	3,855 seers.
3. Ragi	..	..	..	..	..	..	2,462 „
4. Groundnut	..	..	..	..	..	..	2,131 „

MISCELLANEOUS.

Two pairs of Amritmahal bullocks which were on the Farm were sold to the public.

Trained men were sent to private holdings to conduct demonstration in the method of jaggory making and of constructing the improved furnace for jaggory boiling with begasse only. Short courses were given to the fieldmen of the Department and to private individuals.

Cashewnuts.—Two varieties of nuts, viz., (1) Mangalore and (2) Local have been sown in the pasture area during June 1935. Twelve Pusa selections of Togari are being tried here.

Many varieties of fruit plants have been planted during this year to afford material for the students of the Agricultural School for study.

ARCOT DEVARAJ,

Manager,
Government Experimental Farm,
Hebbal.

V. K. BADAMI,

Deputy Director of Agriculture.

REPORT OF THE MYSORE AGRICULTURAL SCHOOL, HEBBAL, BANGALORE, FOR 1934-35.

The school commenced the sessions for the year on 1st June 1934. Sixty-two applications were received for admission to the first year class as against 199 applications last year. The fall in the number of applications is due to the raising of the minimum qualification for admission into the School from E.P.S. to E.C. & P.S. standard of the School Final Examination. The entrance examination was held on 2nd July 1934. Forty-two applicants were called for interview and 30 students were admitted into the first year class. The total strength of the school at the beginning of the year was 87—viz., 33 in the first year, 27 in the second year and 27 in the final year class.

During the year there were 37 scholarships available to the students, of which 28 were Government scholarships and the rest District Board ones as follows : -

Six students were awarded Government scholarships in the first year class.

The final examinations were held during the first week of April 1935. For conducting the examination for the diploma class students Dr. V. K. Badami and Mr. M. Narayana Reddi were appointed examiners for Agriculture, Messrs. A. A. Monteiro, Live Stock Expert in Mysore and C. Narasingaraju, Manager, Cattle Breeding Station, Ajjampur, for Animal Husbandry and Dairying, Messrs. B. G. Appadorai Mudaliar, Industrial Superintendent, Bangalore and Mr. M. G. Singarachar for Agricultural Engineering; Messrs. P. U. Nair, Assistant Superintendent, Serum Institute, Hebbal, and S. B. Vasudeva Rao for Veterinary Science and Dr. L. S. Dorasami, Senior Assistant Botanist and S. B. Vasudeva Rao for Veterinary and Dr. L. S. Dorasami, Senior Assistant Botanist in charge of Sugarcane Breeding Work, for Economic Botany. Thirty-eight students including 11 failed students appeared for the diploma examination and 16 students were declared eligible for the diploma. One student passed with distinction.

The diploma class students were on tour for nine days. They visited the sugarcane farms and Sugar Factory at Mandya, Imperial Dairy Farm, Sunkal Farm, Cattle Fair at Makalidrug and some private estates. The second year class students were also on tour for a short period of five days to Sunkal Farm and Mandya. The expenses of the tour were borne by the students themselves, as sufficient funds were not available.

The students are taking keen interest in sports. The sports section of the School was as usual very active during the year. Matches in cricket, hockey, foot-ball, etc., were played against important local and outside teams. The School won a Silver Cup Trophy in one of the Foot-ball Elevens tournament and Silver medals, being runner up in a Sevens Foot-ball Tournament. Instructions in drill and scout activities continue to teach discipline and to encourage self reliance and spirit of service.

1. Cricket	21 matches.
2. Foot-ball	3 tournaments and 25 matches.
3. Hockey	15 matches and 1 tournament.
4. Scout camping	2 camps.

As small-pox was raging rather severely in Bangalore last year, the students were vaccinated as a precaution in December 1934. The health of the students was good throughout the year.

The congestion in the hostel has not been relieved. Over-crowding in the hostel rooms is quite undesirable. Providing the students and the school rooms with electric lighting has become an urgent necessity. The school has been in existence now for over twenty-two years and considering the great limitations under which it has been working the results have excelled expectations. It is high time now to place it on a permanent basis with a staff of its own, up-to-date equipment and other facilities for turning out men of ability and character to go back to their lands in numbers and to help in the improvement of rural conditions.

M. NARAYAN REDDI,
Vice-Principal.

V. K. BADAMI,
*Principal and Deputy Director
of Agriculture.*

APPENDIX I.

III. SPINNING TESTS.

2. *Spinning Masters' Report.*—(i) *Selection 69.*—The cotton is white, bright, very clean, slightly rough in feel, well charka-ginned. The card sliver is clean, web good and ten flat strips weigh 10.7 gms.

(ii) *Selection 69-1.*—This cotton is almost similar to the preceding sample. Ten flat strips weigh 11.7 gms.

(iii) *Selection 69-3.*—The cotton is white, bright, very clean, slightly rough in feel, well charka-ginned. The card sliver is clean, good, even web and ten flat strips weigh 10.5 gms.

(iv) *Nadam-like 21-22.*—The cotton is white, brightish, very clean, well ginned, has a good feel. The card sliver is clean, web good and even and ten flat strips weigh 11.3 gms.

(v) *Nadam-like 149-152.*—The cotton is white, bright, very clean, well ginned, has a good smooth feel. The card sliver is clean, web good and ten flat strips weigh 13.2 gms.

IV. REMARKS.

(i) *Fibre.*—The two improved strains 69-1 and 69-3 obtained from further work on Selection 69 are some nine per cent longer and 12 per cent finer than their parent Selection 69. The two hybrids are some 16 per cent finer than Selection 69 but while strain 149-152 possesses the same mean fibre-length as Selection 69, strain 21-22 is five per cent longer.

(ii) *Waste.*—These cottons were picked in a very clean condition and gave low blow-room loss. The card-room loss was also on the low side for these samples.

(iii) *Breakages.*—Yarn breakages in the ring frame were few in all counts into which these cottons were spun except 30's of Selection 69 and 34's of strain 21-22.

(iv) *Yarns.*—Selection 69 and strain 21-22 gave slightly less even yarns than the other three strains. The yarns obtained from Selection 69 are practically free of neps while those yielded by the other strains are slightly neppy. From their yarn-strength results, these strains are adjudged suitable for spinning up to the following highest standard warp counts:—

Sample No.	Cotton.	Highest standard warp counts.
2597	Selection 69	24's
2598	„ 69-1	30's
2599	„ 69-3	30's
2600	Nadam-like 21-22	30's
2601	„ 149-152	31's

(v) *Conclusions.*—The two improved strains from Selection 69 and the two hybrids gave practically the same spinning performance and are found to be superior to Sel. 69. Both the improved strains obtained from further selections of Sel. 69 have given much better test than last year, the improvement being more marked in the case of Selection 69-1 which was even inferior to its parent in the last season. The performance of the two hybrids and Selection 69 was very nearly the same as found last year.

III. SPINNING TESTS.

2. *Spinning Master's Report.*—*Herbaceum like 190.*—The cotton is white, bright, perfectly clean, has a good bodied feel, well ginned. The card sliver is clean, web good and even and ten flat strips weigh 3.6 gms.

IV. REMARKS.

(i) *Fibre.*—This year's sample has practically the same mean fibre length as last year's sample of this cotton but is some 10 per cent finer.

(ii) *Waste.*—The cotton was picked in a very clean condition and gave low losses both in the blow room and the card-room. The total loss was four per cent less than that obtained last year.

(iii) *Breakages*.—Yarn breakages in the ring frame were very few in all the three counts into which the cotton was spun.

(iv) *Yarns*.—This cotton gave even to fairly even 30's and fairly even 34's. The yarns obtained from it are slightly neppy. From its yarn strength results, this cotton is adjudged suitable for spinning up to 34's standard warp counts.

(v) *Conclusions*.—The performance of this year's sample is superior to that of the last year's sample and is nearly equal to that of the 1931-32 sample. The agreement between the mill test and the laboratory test is fairly good, considering the difference in the spinning conditions. The mill test gave $3\frac{1}{2}$ per cent higher blow-room loss which may partly be due to the different amounts of trash originally present in the two samples and partly to the difference in the blow room treatment, the mill sample passing twice through a horizontal exhaust opener. Again, the mill test gave a lower carding loss, which is probably due, in part, to the better cleaning in the blow-room and partly to the difference in the size of the two samples. The results for the leaf breaking strength are very nearly the same for 20's and 30's in the two tests, but in this connection it must be remembered that the mill sample was spun from a double lank roving with a higher twist.

Since 1931-32 when this cotton was tested for the first time, it has been adjudged suitable for spinning up to 35's 32's and 34's standard warp counts. This is a good performance and the seasonal variation is quite small. If the cotton keeps up this performance in the subsequent seasons when grown on an extended scale, I agree with the mill report that there will be a ready demand for it.

Grader's Report.

	2597 Sel. 69	2598 Sel. 69-1	2599 Sel. 69-3	2600 Nadam- like 21-22	2601 Nadam- like 149-152	2576 Herba- ceum-like 190
1. Contract valued under ..	Broach	Broach	Broach	Broach	Broach	Broach
2. Class	Extra super fine.	Extra super fine.	Extra super fine.	Extra super fine.	Extra super fine.	Extra super fine.
3. Colour	Slightly creamy.	White	White	White	White	White
4. Staple length	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "	13-16"	$\frac{3}{4}$ "	13-16"
5. Staple strength	Fair	Fair	Fair	Fair	Fair	Fair
6. Regularity	Fair	Fair	Fair	Fair	Fair	Fair
7. Value above or below con- tract rate	Rs. 10 on	Rs. 50 on	Rs. 10 on	Rs. 5 on	..	Rs. 20 on
8. Basis	Rs. 240	Rs. 240	Rs. 240	Rs. 240	Rs. 240	Rs. 240
9. Date of valuation	8-1-35	8-1-35	8-1-35	8-1-35	8-1-35	29-12-34
10. Remarks	..	..	..	Irregular	Irregular	..

APPENDIX II.

III. SPINNING TESTS.

2. *Spinning Master's Report*.—*M.A. IV.* 204-208.—The cotton is white to creamy-white, fairly bright, perfectly clean, well ginned, has a good feel. The card sliver is clean, web good and ten flat strips weigh 12.1 grammes.

M.A. IV. 25-26.—The cotton is white to creamy white, brightish, very clean, well ginned, has a good smooth feel. The card sliver is clean, web good and ten flat strips weigh 14.0 gms.

M.A. IV. Babbur.—The cotton is white to creamy-white, bright, perfectly clean, has a good smooth feel, well ginned. The card sliver is clean and soft, web good and ten flat strips weigh 13.8 gms.

M.A.I. Black Seed.—The cotton is white to creamy white, brightish, very clean, has a good feel, well ginned. The card sliver is clean, web good and ten flat strips weigh 12.0 gms.

M.A. II.—The cotton is white to creamy-white, bright, perfectly clean, has a good smooth feel, well ginned. The card sliver is clean, web good and ten flat strips weigh 10.8 gms.

IV. REMARKS.

(i) *Fibre*.—In this batch of Mysore-American cottons, M.A. IV 204-208 possesses the highest mean fibre-length, M.A. IV 25-25 and M.A. IV Babbur are some two per cent shorter while M.A. II is five per cent shorter. M.A. I Black seed has the shortest staple being nine per cent shorter than M.A. IV 204-208. M.A. IV 25-25 possesses the finest staple being 13 per cent finer than the other four samples among which there is nothing much to choose in this respect.

(ii) *Waste*.—These cottons were picked in a very clean condition and gave low blow-room loss. The card-room loss is also low for M.A. II, while they are normal for the other samples. The total loss was in the neighbourhood of 10 per cent for all these samples.

(iii) *Breakages*.—Yarn breakages in the ring frame were fairly numerous in the 40's counts of M.A. IV Babbur and M.A. II and in all the counts of M.A. I into which it was spun. They were few in all the spun counts of M.A. IV 204-208 and M.A. IV 25-25.

(iv) *Yarns*.—The 40's yarns spun from M.A. IV Babbur and M.A. II are fairly even while those given by M.A. IV 204-208 and M.A. IV 25-25 are fairly even to uneven. M.A. I Black seed gave the least even yarns being only fairly even to uneven in its 30's counts. The yarns yielded by M.A. IV 204-208, M.A. I and M.A. II are practically free from neps while those obtained from M.A. IV 25-25 and M.A. IV Babbur are slight neppy. From their yarn strength results, these cottons are adjudged suitable for spinning up to the following highest standard warp counts:—

Sample No.	Cotton.	Highest standard warp counts.
2602	M.A. IV 204-208	36½
2603	M.A. IV 25-25	34
2604	M.A. IV Babbur	36
2605	M.A. I (Black seed)	22
2606	M.A. II	35½

(v) *Conclusions*.—M.A. IV 204-208, M.A. IV Babbur and M.A. II have given practically the same spinning performance while M.A. IV 25-25 is rather inferior to them. M.A. I which gave comparatively the best performance last year, has deteriorated to a very appreciable extent and has given the worst results this year. The other four cottons show good improvement over last year, the improvement being more marked in the case of M.A. II.

Grader's Report.

	M.A. IV 204-208	M.A. IV 25-25	M.A. IV Babbur	M.A. I Black seed	M.A. II
1. Contract valued under ..	Broach	Broach	Broach	Broach	Broach
2. Class	Extra super fine.	Extra super fine.	Extra super fine.	Extra super fine.	Extra super fine.
3. Colour	White	White	White	White	White
4. Staple length	13-16"	13-16"	13"	13"	15-16"
5. Staple strength	Fair	Fair	Fair	Fair	Fair
6. Regularity	Fair	Poor	Poor	Fair	Fair
7. Value above or below con- tract rate	Rs. 20 on	Rs. 15 on	Rs. 20 on	....	Rs. 60 on
8. Basis	Rs. 240	Rs. 240	Rs. 240	Rs. 240	Rs. 240
9. Date of valuation	8-1-35	8-1-35	8-1-35	8-1-35	8-1-35
10. Remarks .. .. .	....	Irregular	Irregular	....	....

STATEMENT No. 1.

Rainfall Statement.

(Cropping Season).

Month	Rainfall		Rainfall below $\frac{1}{4}$ "		Rainfall below $\frac{1}{2}$ "		Rainfall below 1"		Rainfall below 2"		Rainfall above 2"	
	No. of days	In. C.	No. of days	In. C.	No. of days	In. C.	No. of days	In. C.	No. of days	In. C.	No. of days	lb. C.
April	3	0.90	2	0.26	1	0.64	..	..	..	..	..	..
May	9	2.22	6	0.47	1	0.33	2	1.42	..	..	..	..
June	15	2.74	11	0.66	2	0.67	2	1.42	..	..	..	..
July	13	2.10	11	0.93	1	0.33	1	0.84	..	..	..	..
August	16	2.82	11	0.98	6	1.84	..	..	..	..	..	..
September	2	0.29	2	0.29	..	..	..	..	..	..	..	..
October	14	7.08	5	0.41	3	1.09	4	2.72	2	2.86	..	..
November	5	1.66	3	0.21	..	..	2	1.45	..	..	..	..
Total	77	19.81	51	4.20	14	4.90	11	7.85	2	2.26	..	..

STATEMENT No. 2.

(Field 1).

Each plot is one gunta or 1-40 acre in area. Check after every two varieties. Each variety was repeated thrice.

Selection	Variety	Yield of grain in per cent			
		1934-35		1933-34	1932-33
		Grain in lbs.	Straw in lbs.		
Check (local)	Mixture of G.O.Gc.V.O. and V.C.	100.0—430 lbs.	100.0—1,096 lbs.	100.0	100.0
1. H. K. 21	G. op.	149.1	148.6	94.0	208.3
2. H. K. 20	V. C.	83.5	69.3	82.9	96.6
3. H. K. 5	V. C.	139.5	104.1	153.7	150.0
4. H. K. 10	G. C.	79.4	97.6	101.9	176.1
5. Cox Comb	V. O.	127.7	109.7	100.7	168.9
6. H. K. 8	G. O.	127.1	144.1	108.0	124.4

STATEMENT No. 3.

Each plot is four guntas in area or one-tenth acre. Check after every two varieties. Each variety was repeated thrice.

Selection	Variety	Yield of grain per cent			
		1934-35		1933-34	1932-33
		Grain in lbs.	Straw in lbs.		
Check	Mixture	100.0—1,034.3	100.0—1528.6	100.0	100.0
H. K. 18	Fo.	84.7	90.7	98.2	156.6
H. K. 82 (Bochanphalli)	Vo.	85.5	122.1	80.1	182.9
H. K. 13	V. c.	101.2	100.3	95.9	136.1
H. K. 25	Go.	108.2	119.5	99.9	198.5

STATEMENT No. 4.

Each plot is one gunta or 1/40 acre in area. Check after every two varieties. Each variety was repeated thrice.

Selection	Variety	Yield of grain in per cent			
		1934-35		1933-34	1932-33
		Grain in lbs.	Straw in lbs.		
Check	Mixture	100.0—820	100.0—1,433	100.0	100.0
K. 1	G. C.	115.0	72.2	102.7	129.8
H. K. 14	G. op.	60.1	66.5	94.3	113.6
K. 2	G. op.	81.5	86.3	83.6	119.8
H. K. 19	V. Comp.	95.8	69.4	96.2	164.7
H. K. 22	V. op.	71.6	105.5	60.2	112.2
H. K. 61	V. Comp.	71.4	54.6	84.0	115.2

STATEMENT No. 5.

Each plot is one gunta or 1-40th acre in area. Check after every two varieties. Each variety was repeated thrice.

Selection	Variety	Yield of grain in per cent			
		1934-35		1933-34	1932-33
		Grain in lbs.	Straw in lbs.		
Check	Mixture	100.0—664	100.0—1,222	100.0	100.0
H. K. 6	G. op.	88	89.5	79.9	148.3
H. K. 102	V. Comp.	134.3	116.5	109.9	187.7
H. K. 3	G. op.	44.3	43.5	105.5	180.0
H. K. 101	V. Comp.	84.5	78.2	143.7	108.6
H. K. 117	V. Comp.	80.6	83.4	133.6	93.7
Muttunga 36	V. Comp.	99.6	99.6	79.3	125.1

STATEMENT No. 6.

Each plot is one gunta or 1-40th acre in area. Check after every two varieties. Each variety was repeated thrice.

Selection	Variety	Yield of grain in per cent			
		1934-35		1933-34	1932-33
		Grain in lbs.	Straw in lbs.		
Check	Mixture	100.0—1,341	100.0—3,144	100.0	100.0
H. K. 122	G. op.	124.6	107.3	110.7	174.5
C. 126	G. op.	46.8	74.3	114.5	123.4
H. K. 124	G. op.	122.7	144	95.9	167.5
H. K. 125	G. op.	123.2	117.7	130.9	118.0
H. K. 121	G. op.	90.8	88.2	73.8	101.1
H. K. 23	G. op.	60.4	82.3	98.0	88.0

STATEMENT No 6 (a).

(Field 6).

Hain ragi row tests. Repeated three times with check after every two varieties.

Selections							Variety	Yield of grain per cent 1934-35
Check	..	..	..	..	..	..	Mixture	100.0
1. H. 22	..	..	..	..	..	..	V. op	121.0
2. C. 357	..	..	..	..	..	..	G. op	144.9
3. C. 362	..	..	..	..	..	..	G. op	132.4
4. C. 271	..	..	..	..	..	..	G. op	106.4
5. C. 563	..	..	..	..	..	..	V. op	97.7
6. C. 358	..	..	..	..	..	..	V. op	103.4
7. C. 359	..	..	..	..	..	..	V. op	142.4
8. Jenumudda	..	..	..	..	..	..	G. op	108.2
9. Jadesangha	..	..	..	..	..	..	G. op	128.6
10. Rudrajade	..	..	..	..	..	..	V. op	71.7

STATEMENT No. 7.

The promising strains are being tested in the bulk plots.

							Per cent yield of grain 1934-35
H. K. 5	..	..	..	..	..	..	139.5
H. K. 125	..	..	..	..	..	..	123.2
H. K. 102	..	..	..	..	..	..	134.3
H. K. 122	..	..	..	..	..	..	124.6
Cox Comb	..	..	..	..	..	..	127.7

STATEMENT No. 8.

Experiments of *Hain Ragi* Varieties sown in *Kar* season. Repeated three times with check after every two varieties. Area 12 guntas. Date of sowing 11th May 1934 and date of harvesting 24th October 1934.

Selection	Variety	Yield of grain per cent				
		1930-31	1931-32	1932-33	1933-34	1934-35
Check	Mixture	100.0	100.0	100.0	100.0	100.0—238 seers per acre.
H. 22	V. op	..	87.3	103.9	111.1	121.0
C. 357	G. op	124.4	113.4	99.2	114.5	142.4
C. 362	G. op	106.3	95.2	95.1	114.8	106.4
C. 271	G. op	125.3	85.8	120.9	99.2	144.9
C. 563	V. op	101.7	73.2	90.4	90.4	97.7
C. 358	V. op	130.3	108.2	80.6	89.0	132.4
C. 359	V. op	117.5	85.0	121.2	80.7	103.4
Jenumudda	G. op	..	75.9	74.6	74.6	108.2
Jadesangha	G. op	..	..	..	..	122.6
Rudra Jade	V. op	..	..	..	..	71.7

STATEMENT No. 8 (a).

Experiment of Hain Ragi Varieties sown in Hain Season. Repeated three times with Check after every two varieties. Area 12 guntas. Date of sowing 27th July 1934. Date of Harvesting 15th December 1934

Selection			Variety	Yield of grain in percent 1934-35	This experiment was taken up only during 1934-35.
Check	..	..	Mixture	100.0—85 seers per acre.	
H. 22	..	..	V. op	313.9	
C. 357	..	..	G. op	434.7	
C. 362	..	..	G. op	262.3	
C. 271	..	..	G. op	308.3	
C. 553	..	..	V. op	282.5	
C. 388	..	..	V. op	258.7	
C. 359	..	..	V. op	403.3	
Jenumudde	..	..	G. op	263.2	
Jadesangha	..	..	G. op	176.6	
Rudra Jade	..	..	G. op	50.0	

STATEMENT No. 9.

Statement of rainfall from 1st April 1934 to 31st December 1934.

Month	Amount of rainfall in inches	No. of rainy days	Details of rainy days			
			Less than $\frac{1}{2}$ "	$\frac{1}{2}$ " to 1"	1" to 2"	More than 2"
April 1934	1.99	5	6	1	..	..
May 1934	1.45	6	5	1	..	..
June 1934	2.62	7	6	..	1	..
July 1934	0.74	5	5	..	..	..
August 1934	0.74	11	11	..	..	..
September 1934	..	..	..	..	..	..
October 1934	9.20	11	5	1	4	1
November 1934	3.51	4	1	2	1	..
December 1934	..	..	..	..	..	..
Total	21"	49	37	5	6	1

Agri. School.

STATEMENT No. 10.

Paddy Breeding Station, Nagenahalli.

Selections under plot trials (1934-35).

Selection number and name	Average yield of	
	Grain in lbs. per acre (1934-35)	Straw in lbs. per acre (1934-35)
1. G. E. B. 24—Check	1958 ± 1022	4129 ± 331
2. S. 574—C. 110-1	2585 ± 226	4589 ± 400
3. S. 236 Nagpur 36	2581 ± 317	4756 ± 718
4. S. 246 Nagpur 46	2424 ± 348	4006 ± 338
5. S. 571 Nagpur C. 110-1	2180 ± 206	6502 ± 650
6. S. 576 C. 110-6	2128 ± 153	5917 ± 653
7. S. 197 Alur Sanna 39	2061 ± 238	3969 ± 204
8. S. 199 Alur Sanna 41	2387 ± 98	4768 ± 111
9. S. 268 Ganasale 8	1997 ± 278	3994 ± 659
10. S. 269 Ganasale 9	2296 ± 371	4227 ± 861
11. G. E. B. 24—Check	1981 ± 344	3394 ± 630
12. S. 476 Pattasamanhalli 51	2531 ± 122	5006 ± 664
13. S. 363 do 34	2301 ± 56	5333 ± 770
14. S. 511 do 86	2253 ± 60	5383 ± 536
15. S. 364 do 35	2251 ± 178	5567 ± 471
16. S. 477 do 52	2149 ± 103	5590 ± 60
17. S. 581 do C. 98-1	1978 ± 104	4273 ± 215
18. S. 590 do C. 98-10	1853 ± 301	3708 ± 188
19. S. 606 do C. 98-25	1554 ± 477	36 9 ± 134
20. S. 67 Kembathi 5	2468 ± 48	5123 ± 294
21. S. 292 Saklathi 14	2403 ± 327	4529 ± 664
22. S. 139 Kaddi 62	2803 ± 224	4347 ± 462
23. S. 434 Kaddi 115	2276 ± 216	4513 ± 518
24. G. E. B. 24—Check	2368 ± 583	4024 ± 235
25. S. 317 Halubbalu 25	1342 ± 135	1712 ± 293
26. S. 328 Banku 11	873 ± 172	3182 ± 568
27. S. 657 Maharaj Bhogam C. 83/47	3150 ± 411	444 ± 443
28. S. 625 do C. 83/15	2862 ± 288	4331 ± 146
29. S. 617 do C. 83/7	2746 ± 204	4396 ± 276
30. S. 624 do C. 83/14	2731 ± 337	4306 ± 51
31. S. 616 do C. 83/6	2700 ± 391	3922 ± 537
32. S. 615 do C. 85/5	2371 ± 411	3953 ± 448
33. S. 683 G. E. B. 24 Selection 23	2639 ± 207	4023 ± 223
34. S. 684 do „ 24	2568 ± 193	3749 ± 310
35. S. 682 do „ 22	2567 ± 275	4518 ± 291
36. S. 661 do „ 1	2530 ± 224	4153 ± 1428
37. S. 686 do „ 26	2595 ± 187	3970 ± 131
38. S. 696 do „ 36	2400 ± 12	3783 ± 216
39. S. 698 do „ 39	2247 ± 206	3368 ± 358
40. S. 702 do „ 42	2120 ± 222	3864 ± 461
41. S. 697 do „ 37	2114 ± 274	3401 ± 381
42. S. 701 do „ 41	2052 ± 127	3563 ± 498

STATEMENT No. 11.

Paddy varieties under plot trials (1934-35)—Nagenahalli, Mysore.

Varieties	Average yield of	
	Grain per acre in lbs.	Straw per acre in lbs.
1. Bya hunda -C. 86	2485 ± 493	3312 ± 282
2. Chambe sanna C. 72	2454 ± 273	3643 ± 272
3. Dusi sanna C. 82	2450 ± 214	3370 ± 87
4. Kichodi samba C. 85	2428 ± 394	3543 ± 360
5. Maharaj Bhagam C. 83	2346 ± 146	4002 ± 290
6. Paddy No. 3 C. 22	2326 ± 251	3075 ± 634
7. Bilo-Bhatta. C. 61	2307 ± 269	4081 ± 143
8. Walva---C. 47	2198 ± 609	2825 ± 251
9. Nagpur sanna C. 16	2187 ± 419	3336 ± 445
10. G. E. B. 24---C. 8	2066 ± 245	3535 ± 79
11. Balaram Bhagam C. 81	2053 ± 264	3814 ± 343
12. Ratnachodi---C. 63	1891 ± 367	3341 ± 517
13. Natanahalli sanna C. 2	1801 ± 147	3783 ± 872
14. Gabah Tongson---C. 88	1797 ± 690	2739 ± 344
15. Hebbal 3 months---C. q14	1767 ± 104	2898 ± 195
16. Delhi Prayag---C. 84	1719 ± 215	2895 ± 287
17. Gabeh Rosaki---C. 90	1691 ± 386	3537 ± 682
18. P. S. 49---C. 1	1494 ± 233	2289 ± 440
19. Pichodi C. 56	1413 ± 170	2657 ± 130
20. Gabah Serivimankote C. 91	1404 ± 222	2222 ± 527

STATEMENT No. 12.

Paddy Breeding Station, Nagenahalli.

Manurial Experiments 1934-35.

Treatment	1934-35		
	Average yield per acre in lbs.		
	Grain	Straw	Profit— Loss—
Check	2978 ± 276	4485 ± 748	....
Single dose	3350 ± 215	5795 ± 1174	— 9 15 7
One and a half dose	3533 ± 157	5865 ± 562	— 16 11 0
Double dose	3618 ± 62	6532 ± 1282	— 24 11 9
Two and a half dose	3650 ± 115	6552 ± 1577	— 36 13 0
Check	2673 ± 213	4843 ± 69	....
Nitrogen	2968 ± 184	5351 ± 282	0 5 19
N+phosphoric acid	3221 ± 300	5842 ± 625	— 2 5 5
N+Potash	2864 ± 395	5168 ± 632	— 6 4 6
N+P2O5---K2O	3136 ± 35	6283 ± 714	— 6 4 4
Check	2711 ± 509	4730 ± 551	....
Nas. Ca CN 2	3031 ± 10	4872 ± 519	— 12 14 8
Nas. Na No 3*	2861 ± 151	5111 ± 236	— 19 12 9
Nas. Am, So, ...	3459 ± 162	5838 ± 537	— 6 8 4
Nas. G. O. Cake	2806 ± 362	5199 ± 1367	— 16 13 11
Check	2503 ± 311	3468 ± 607	....
P 205 as Super phosphate	3007 ± 163	5040 ± 524	— 1 11 4
P 205 as steamed Bone	2810 ± 471	4934 ± 1099	— 7 15 9
Check	2657 ± 463	4935 ± 861	....
30 lbs. N-45 lbs. P. 205	2946 ± 374	6381 ± 773	— 9 1 6
30 lbs. N-60 lbs. P. 205	3064 ± 9	5972 ± 558	— 10 11 0
30 lbs. N-90 lbs. P. 205	3273 ± 96	6996 ± 444	— 8 3 11

STATEMENT No. 13.

Ammonium Sulphate and Sodium Nitrate in different proportions, (1934-35).
(*Pit Experiments*).

Treatment	Average	
	Grain in grams.	Straw in grams.
1. 60 Am ₂ So ₄	33.4	317.6
2. 45 Am ₂ So ₄ plus 15 Na NO ₃	41.8	284.0
3. 30 Am ₂ So ₄ plus 30 Na NO ₃	66.0	218.8
4. 15 Am ₂ So ₄ plus 45 Na NO ₃	48.4	206.0
5. 60 Na NO ₃	39.0	242.6

STATEMENT No. 14.

Paddy Bulk Varietal Experiment— 'G' Range, 1934-35.

Name of variety	Yield per acre	
	Grain in srs.	Straw in lbs.
1. H. B. 829	1,400	4,720
2. W. 3629	1,540	4,800
3. S. I. 1029	1,430	3,520
4. D. 329	1,800	3,840
5. T. 129	1,120	2,400

STATEMENT No. 15.

Paddy bulk varietal experiment in "I" Range for the year 1934-35.

Name of the variety	Yield per acre	
	Grain in srs.	Straw in lbs.
1. H. B. 829	1,110	2,960
2. W. 3629	880	2,080
3. S. I. 1029	880	2,740
4. D. 329	1,060	3,880
5. T. 129	900	2,480
6. A. 229	510	2,000
7. G. Sivamankota	710	2,460
8. G. Rosaki	680	3,360
9. G. Temas	740	3,100
10. G. Tiginna	580	2,860
11. S. 12	670	2,360
12. S. 246	610	2,380
13. S. I. 1329	960	2,660
14. S. O. 829	1,200	3,500
15. Sepoy	120	1,020
16. H. O. 529	1,160	2,260
17. H. a. 1129	1,240	4,260
18. Walya 429	1,150	3,460

STATEMENT No. 16.

Paddy varietal experiment for the year 1934-35. A to F Range.

Marthur Farm.

Name of the variety							Yield per acre	
							Straw in lbs.	Grain in srs.
1. W. 3629	..	..	..	..	..	..	6,220	2,600
2. W. 529	..	..	..	..	..	..	4,760	2,560
3. Walya	..	..	..	..	..	..	4,880	2,520
4. A. 229	..	..	..	..	..	..	5,160	2,080
5. A. 1829	..	..	..	..	..	..	5,560	1,840
6. A. 1429	..	..	..	..	..	..	3,980	1,720
7. A. 1029	..	..	..	..	..	..	4,480	2,040
8. H. O. 629	..	..	..	..	..	..	5,300	2,460
9. S. I. 1029	..	..	..	..	..	..	5,140	2,640
10. H. O. 529	..	..	..	..	..	..	6,120	2,980
11. H. B. 829	..	..	..	..	..	..	7,180	1,940
12. H. B. 1529	..	..	..	..	..	..	5,680	1,900
13. H. B. 229	..	..	..	..	..	..	5,100	1,580
14. H. B. 1629	..	..	..	..	..	..	4,080	2,200
15. H. B. 1929	..	..	..	..	..	..	5,380	1,940
16. H. B. 4429	..	..	..	..	..	..	4,160	2,260
17. D. 329	..	..	..	..	..	..	5,120	2,060
18. T. 129	..	..	..	..	..	..	4,300	2,340
19. H. a. 2129	..	..	..	..	..	..	4,160	2,000
20. S. I. 1329	..	..	..	..	..	..	4,310	2,600
21. G. Rosak	..	..	..	..	..	..	4,240	1,080
22. T. Temas	..	..	..	..	..	..	3,200	680
23. G. Srivamankota	..	..	..	..	..	..	4,400	600
24. Tiginna	..	..	..	..	..	..	5,120	1,000
25. Walya	..	..	..	..	..	..	5,160	2,880
26. H. B. ..	..	..	..	..	..	..	5,040	2,200
27. Siddasale	..	..	..	..	..	..	6,400	2,400
28. D. B. ..	..	..	..	..	..	..	6,200	2,600
29. Hasadi	..	..	..	..	..	..	5,920	2,120
30. Alursanna	..	..	..	..	..	..	4,080	1,840
31. Bhave	..	..	..	..	..	..	3,800	2,320
32. G. E. B. 24	..	..	..	..	..	..	5,040	2,320
33. Somasale	..	..	..	..	..	..	6,020	2,240
34. Togarina	..	..	..	..	..	..	4,720	2,680
35. Jeddu (c)	..	..	..	..	..	..	9,160	2,840
36. Musaley(a)	..	..	..	..	..	..	8,960	2,920

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STATEMENT No. 17.

Exotic canes.

Varieties	Hobbal Farm				Mandy, Irwin Canal Farm			
	Percent of germination	Percent of borer	General Brix	Per acre tonnage	Per cent of germination	Percent of borer	General Brix	Per acre tonnage
1. Red Mauritius ..	91	..	20.0	15	56	9	17.8	20.3
2. Local Striped ..	88	..	20.5	15	..	..	..	..
3. Batjan ..	..	..	..	..	60	9	22.8	9.5
4. P. O. J. 33a ..	94	2.4	20.8	20	65	7	21.6	32.3
5. P. O. J. 33 ..	88	..	21.2	27.8	..	..	..	..
6. P. O. J. 213 ..	87	..	17.4	26.9	68	8	20.2	29.85
7. P. O. J. 247 ..	92	..	19.9	19.0	70	10	20.2	12.8
8. E. K. 28 ..	92	..	20.5	22.2	75	9	21.0	21.85
9. P. O. J. 2883 ..	95	..	17.6	16.6	65	8	21.8	40.3
10. P. O. J. 2727 ..	95	..	19.8	24.0	66	10	21.6	4.0
11. P. O. J. 2878 ..	93	..	19.5	10.2	68	8	21.0	21.85
12. P. O. J. 100 ..	62	..	16.0	10.0	60	10	19.6	2.7
13. P. O. J. 113 striped ..	95	..	14.8	15.7	..	..	..	..
14. Seely seedlings ..	94	..	19.6	18.9	68	7	19.0	19.6
15. Kassoer ..	95	..	15.8	23.8	65	10	17.4	24.9
16. B. 6388 ..	77	..	17.0	13.1	56	13	20.8	9.2
17. B. 6346 ..	66	..	18.0	7.3	55	16	19.0	9.5
18. B. 1529 ..	78	..	21.0	14.9	60	11	17.2	16.1
19. B. 6308 ..	79	..	15.0	11.4	62	8	17.0	22.16
20. B. 1528 ..	78	..	15.0	11.4	60	13	17.8	21.6
21. B. 6446 ..	..	..	..	..	..	..	..	..
22. B. 3747 ..	74	..	16.5	7.6	52	12	20.2	18.2
23. A. 2 ..	64	..	11.5	11.7	62	10	20.2	26.0
24. A. 95 ..	84	..	14.0	14.1	65	11	19.8	12.75
25. Q. 813 ..	87	..	11.5	23.3	65	10	19.0	19.55
26. Q. 116 ..	89	..	18.0	15.3	..	..	..	..
27. D. 1135 ..	92	..	13.5	18.0	64	8	20.6	22.35
28. D. 1135 striped ..	94	..	13.0	18.0	..	..	..	..
29. D. 625 ..	..	..	..	..	..	..	..	..
30. D. 109 ..	93	..	21.0	20.6	60	11	19.8	24.1
31. D. 74 ..	93	..	16.5	15.5	65	9	18.0	33.1
32. White Mauritius ..	..	..	..	..	..	..	..	..
33. Mauritius 33 ..	88	..	21.5	11.1	50	10	17.8	20.3
34. Striped M. ..	66	..	18.0	7.7	55	10	20.0	12.9
35. Mauritius 16 ..	92	..	22.0	17.2	62	4	23.4	25.6
36. Mauritius 6 ..	47	..	23.0	5.8	50	12	23.0	18.9
37. Ashy Mauritius ..	..	..	..	..	..	..	..	..
38. Mauritius 131 ..	..	..	..	..	..	..	..	..
39. Waxy Red ..	..	..	..	..	..	..	..	..
40. White transparent ..	71	..	22.5	12.1	..	..	..	..
41. Striped Tanna ..	73	..	21.5	10.0	52	10	18.0	8.15
42. Tanna Balanba ..	..	..	..	..	..	..	..	..
43. Tanna Green C.P. ..	..	..	..	..	..	..	..	..
44. Manjar ..	57	..	18.5	6.8	..	..	..	..
45. Fiji B. ..	74	..	20.0	2.9	58	20	21.0	3.2
46. Blue Cane ..	65	..	20.0	9.5	..	..	..	..
47. Cavangere ..	..	..	..	..	..	..	..	..
48. B. 6150 ..	61	..	13.0	9.8	61	10	17.2	15.25
49. E. K. 2 ..	94	..	19.0	18.3	60	13	15.0	44.35
50. P. O. J. 33a striped ..	88	..	21.2	27.8	..	..	..	..
51. P. O. J. 2725 ..	69	..	19.6	4.7	..	..	..	..
52. H. 109 ..	42	..	19.0	4.3	..	..	..	..
53. Purple M. ..	50	..	20.0	1.3	..	..	..	..
54. Yellow M. ..	52	..	20.0	1.2	..	..	..	..
55. B. 6388 ..	77	..	17.0	13.1	..	..	..	..
56. Kassoer-19 ..	..	..	..	..	70	10	16	19.5
57. Kassoer-7 ..	..	..	..	..	58	14	17	34.25
58. Kassoer-8 ..	..	..	..	..	70	8	18.6	12.1
59. Kassoer-9 ..	..	..	..	..	65	7	16.2	28.2

STATEMENT No. 18.

Varieties	Hebbal Farm				Mandya. Irwin Canal Farm			
	Percent of germination	Percent of borer	General Brix	Per acre tonnage	Percent of germination	Percent of borer	General Brix	Per acre tonnage
1. H. M. 320	86	..	22.0	21.0	80	15	21.0	22.15
2. Kardlia	84	..	12.0	5.5	70	29	17.8	11.0
3. Grass cane Hubli	96	..	17.0	33.3	68	20	16.4	22.06
4. Dhar	93	..	19.0	8.5	65	28	17.6	17.6
5. Thambda Khanapur	89	..	20.0	11.4	59	28	22.0	18.0
6. Bhangadya	88	..	18.8	13.7	..	..	..	..
7. K. Dharwar	91	..	20.0	8.0	68	32	18.1	15.65
8. Red Cane Manjiri	89	..	20.0	17.3	65	32	22.0	18.0
9. Pundia N. P.	78	..	19.8	5.8	62	35	18.6	12.6
10. Khajuria	79	..	13.0	3.6	..	..	..	..
11. Maora	90	..	20.0	8.5	68	26	19.0	10.65
12. Baoria	91	..	20.0	8.5	..	..	..	..
13. Henuja	92	..	13.0	4.0	78	35	18.0	18.6
14. Katara	91	..	13.0	2.9	80	30	17.0	8.65
15. Co. 313	94	..	20.0	19.9	75	20	20.2	20.7
16. Co. 301	89	..	21.0	29.3	68	22	19.8	22.65
17. Co. 205	92	..	19.0	16.3	76	20	18.8	18.0
18. Co. 349	93	..	20.5	16.8	72	25	20.8	25.6
19. Co. 290	94	..	19.5	25.1	59	30	19.2	28.55
20. Co. 281	87	..	20.5	14.2	72	20	19.2	30.6
21. Co. 351	88	..	21.5	18.6	56	31	19.8	18.1
22. Co. 352	86	..	20.5	17.7	67	20	20.8	10.6
23. Co. 353	91	..	20.0	12.2	60	40	17.4	18.6
24. Co. 356	90	..	22.5	24.4	80	18	21.0	25.85
25. Co. 357	92	..	18.5	11.2	70	22	18.6	22.0
26. Co. 355	89	..	21.5	22.1	78	20	20.0	13.0
27. Co. 401	91	..	20.0	9.1	65	20	21.2	15.6
28. Co. 402	89	..	15.0	21.6	80	25	17.0	20.65
29. Co. 408	92	..	20.5	14.6	72	18	21.2	18.0
30. Co. 411	87	..	20.0	18.7	68	25	20.8	25.9
31. H. M. 487	87	..	20.0	11.7	65	35	17.4	20.65
32. H. M. 511	88	..	20.0	26.1	66	30	21.0	20.0
33. H. M. 606	81	..	19.5	25.3	76	25	17.2	28.15
34. H. M. 165	89	..	20.0	5.5	60	26	22.8	20.1
35. H. M. 603	85	..	18.0	17.3	63	20	15.8	32.0
36. H. M. 801 striped	79	..	20.0	6.8	58	30	20.6	20.1
37. H. M. 602	77	..	21.0	11.4	62	32	21.4	25.15
38. H. M. 603	67	..	20.2	7.5	70	35	22.0	35.7
39. H. M. 607	68	..	15.5	20.5	74	28	18.8	36.2
40. H. M. 608	67	..	21.0	5.5	68	30	21.0	38.7
41. H. M. 609	72	..	15.0	15.1	60	25	16.4	28.6
42. H. M. 500	74	..	15.0	7.9	69	28	19.0	22.65
43. H. M. 500 striped	75	..	15.0	9.1	62	20	19.0	18.6
44. H. M. 544	69	..	15.0	6.3	60	33	19.6	20.0
45. H. M. 544 striped	77	..	15.0	4.9	..	..	..	..
46. H. M. 542	79	..	15.0	14.4	56	36	20.0	20.1
47. H. M. 553	68	..	14.0	13.1	62	32	19.9	22.1
48. H. M. 312	67	..	13.0	10.8	60	30	18.0	32.6
49. H. M. 332	59	..	16.0	8.5	65	35	20.0	18.0
50. H. M. 303	86	..	16.0	7.2	60	28	20.0	30.6
51. H. M. 210	84	..	18.0	10.6	50	25	18.0	25.5
52. H. M. 11	76	..	16.0	7.0	60	20	23.1	20.2
53. H. M. 89	79	..	15.0	4.8	65	25	22.0	21.15
54. H. M. 610	73	..	10.0	9.8	67	28	18.2	25.55
55. H. M. 89-3	..	..	..	..	60	28	22.0	21.15
56. H. M. 337	..	..	..	..	65	25	18.8	22.65
57. H. M. 359	..	..	..	..	60	30	21.0	15.6
58. H. M. 537	..	..	..	..	66	20	21.0	28.25
59. H. M. 600	..	..	..	..	55	27	20.0	18.2
60. Co. 403	..	..	..	..	63	28	21.0	18.6
61. Co. 416	..	..	..	..	68	23	18.0	12.7
62. Kaburia	..	..	..	..	65	30	19.0	12.6
63. Local Rasthali	..	..	..	..	68	28	19.6	22.7
64. Rasthali striped	..	..	..	..	70	33	21.0	20.6
65. Rasthali Savand- halli	..	..	..	..	69	24	18.6	18.0
66. Elephant cane	..	..	..	..	68	22	14.8	..
67. R. M. Stripe Babbur	..	..	..	..	75	26	18.8	18.95
68. R. M. Stripe Hebbal	..	..	..	..	70	25	18.8	20.65
69. Co. 201	..	..	..	..	75	28	27.0	23.0
70. Co. 202	..	..	..	..	80	20	16.4	20.65
71. Co. 203	65	..	..	..	65	26	19.8	12.3
72. Co. 204	..	..	..	..	70	30	19.2	18.0
73. Co. 206	..	..	..	..	72	28	18.2	22.6

STATEMENT No. 19.

Shivally 1 A. I.C.F.

Planted on 18-2-1934.

Harvested 26-1-1935.

One Gunta per variety.

Variety						Tonnage per acre	General Brix
H. M. 626	..	..	..	..	..	28.3	19.6
H. M. 629	..	..	..	..	..	35.75	20.0
H. M. 613	..	..	..	..	..	26.25	20.0
H. M. 614	..	..	..	..	..	32.00	20.4
H. M. 612	..	..	..	..	..	32.50	19.0
H. M. 606	..	..	..	..	..	44.75	17.0
H. M. 608	..	..	..	..	..	36.00	23.0
H. M. 609	..	..	..	..	..	31.25	20.0
H. M. 320	..	..	..	..	..	21.25	21.0

STATEMENT No. 20.

Study of seasonal planting of H.M. 320—on one gunta plots. C.I.F.

Date of Planting		Borer Percent	Flowering Percent	Tonnage	Remarks
19th January 1933	..	15	15	42.5	
15th February 1933	..	17	12	38.25	
1st March 1933	..	12	9	52.9	
15th March 1933	..	20	3	38.25	
1st April 1933	..	20	..	38.00	
15th April 1933	..	28	..	29.25	
1st May 1933	..	36	..	17.00	
15th May 1933	..	40	..	13.25	
1st June 1933	..	25	..	6.10	Bad germination.
15th June 1933	..	18	..	20.0	
1st July 1933	..	18	..	26.52	
15th July 1933	..	16	..	15.00	Bad germination.
1st August 1933	..	15	..	23.50	
15th August 1933	..	20	..	1.5	Very bad germination.
1st September 1933	..	22	..	34.75	
15th September 1933	..	19	..	31.00	
1st October 1933	..	20	..	25.52	
15th October 1933	..	20	..	18.00	
1st November 1933	..	30	..	12.00	Bad germination on account of poor soil conditions.
15th November 1933	..	25	..	21.00	
1st December 1933	..	18	..	11.5	
15th December 1933	..	20	..	12.0	

STATEMENT No. 21.

Study of November, December and January plantings. I.C.F.

First batch planted on 21-11-1933

Harvested on 15-1-1935.

Second batch planted on 21-12-1933.

Harvested on 26-1-1935.

Third batch planted on January 1934

Harvested on Feb. 1935.

Variety					November planting Tonnage	December planting Tonnage	January planting Tonnage
1.	P. O. J. 2878	..	..	..	27.4	41.50	20.55
2.	H. M. 617	..	..	..	41.5	55.60	31.55
3.	H. M. 622	..	..	..	39.75	47.50	25.25
4.	H. M. 609	..	..	..	14.5	57.25	28.75
5.	H. M. 614	..	..	..	42.5	45.30	27.60
6.	H. M. 619	..	..	..	47.25	52.16	26.75
7.	H. M. 626	..	..	..	37.25	26.75	15.13
8.	H. M. 607	..	..	..	37.67	40.45	36.4
9.	H. M. 630	..	..	..	41.75	57.25	32.25
10.	H. M. 629	..	..	..	51.25	57.25	28.55
11.	H. M. 320	..	..	..	46.05	53.00	45.18
12.	H. M. 165	..	..	..	30.70	39.00	20.20
13.	H. M. 608	..	..	..	36.75	34.02	21.30
14.	H. M. 89-2	..	..	..	20.25	27.75	21.30
15.	H. M. 500 striped	..	..	..	38.75	44.75	18.75
16.	H. M. 606	..	..	..	39.5	42.00	28.50
17.	H. M. 165-5 of 32	..	..	..	48.5	58.5	20.75
18.	H. M. 542	..	..	..	40.45	60.1	20.1
19.	Co. 349	..	..	..	52.25	43.55	25.6
20.	Co. 403	..	..	..	63.75	54.55	18.6
21.	A. 95	..	..	..	23.25	31.5	12.7
22.	B. 6308	..	..	..	52.8	48.25	22.15
23.	Q. 813	..	..	..	29.25	34.75	19.5
24.	Q. 116	..	..	..	31.50	21.55	

STATEMENT No. 22.

Statement of rainfall received for the year 1934-35.

Month					Rainfall		No. of days over which it was distributed
					Inches	Cents	
1.	July 1934	..	..	..	2	5	8
2.	August 1934	..	..	..	..	61	6
3.	September 1934	..	..	..	..	26	5
4.	October 1934	..	..	..	6	87	9
5.	November 1934	..	..	..	..	47	2
6.	December 1934	..	..	..	..	..	....
7.	January 1935	..	..	..	..	40	1
8.	February 1935	..	..	..	..	..	....
9.	March 1935	..	..	..	..	..	....
10.	April 1935	..	..	..	1	23	4
11.	May 1935	..	..	..	2	12	6
12.	June 1935	..	..	..	1	56	6

STATEMENT No. 23.

The following are the results obtained in the wilt plot during 1934-35.

Variety	Latin square method Yield per acre		Percentage of wilt attack	Ginning percentage
	Kapas in lbs.	Lint in lbs.		
1. Dharwar II	258.0	68.88	14.7	26.70
2. Selection 69	157.0	41.69	34.0	26.56
3. H. 190	91.0	27.50	42.5	30.00
4. Nadam-like 21-22	104.0	26.00	24.2	25.00
5. Nadam-like 149-152	76.0	19.95	38.0	26.25
6. Arboreum Cross 69-70	43.0	8.35	24.0	19.43
7. Arboreum Cross 76-77	125.0	33.47	27.6	26.78
8. Jayawant	237.0	65.65	10.0	27.70

STATEMENT No. 24.

Statement showing the various yields of Sannahatties grown at Babbur Farm,
Dry lands--during the year 1934-35.

Variety	Latin square method Yield per acre		Ginning percentage	Strip method Yield per acre	
	Kapas in lbs.	Lint		Kapas in lbs.	Lint
1. Local Sannahatti	281.0	64.65	23.01	82.0	22.86
2. Selection 69	270.0	71.60	26.52	75.0	19.89
3. Selection 69 (1)	211.0	59.71	28.30	78.0	22.0
4. Selection 69 (3)	229.0	64.57	28.20	82.0	23.12
5. H. 190	230.0	72.38	31.47	84.0	25.80
6. Nadam-like 21-22	210.0	44.01	20.96	52.0	10.86
7. Nadam-like 149-152	237.0	53.32	22.50	59.0	13.27
8. Nadam	278.0	35.32	16.70	100.0	16.7

STATEMENT No. 25.

Dates of sowing	Yields obtained from three repetitions					
	Local Doddahathi		M.A. IV 204-208		Sel. 59	
	Lbs.	Oz.	Lbs.	Oz.	Lbs.	Oz.
24th April 1934	24	11 $\frac{1}{2}$	25	10	9	3
9th May 1934	20	8 $\frac{1}{2}$	21	10 $\frac{1}{2}$	15	11
24th May 1934	15	2	17	3 $\frac{1}{2}$	12	2 $\frac{1}{2}$
10th June 1934	15	6 $\frac{1}{2}$	14	11 $\frac{1}{2}$	15	5 $\frac{1}{2}$
25th June 1934	13	14	13	1 $\frac{1}{2}$	15	14
10th July 1934	10	9	5	15 $\frac{1}{2}$	10	8
25th July 1934	16	5	17	3	12	11
16th August 1934	14	8	12	12	11	14
31st August 1934	11	4	7	1	11	2
1st October 1934	9	7	8	5	9	7
20th October 1934	3	9	3	2	6	8
6th November 1934	1	10	0	14	2	4

STATEMENT No. 26.

Statement showing the yields of cotton varieties grown at Babbur Farm and at Singapur Farm 1934-35.

Variety	Rain crop grown in Singapur Farm			Irrigated crop grown on Babbur Farm		
	Yield per acre		Ginning per cent	Yield per acre		Ginning per cent
	Kapas in lbs.	Lint in lbs.		Kapas in lbs.	Lint in lbs.	
1. Local Doddahatti ..	173.0	45.71	27.58	469.0	130.56	27.84
2. M. A. II ..	186.0	53.88	28.97	575.0	167.61	29.15
3. M. A. IV 204-208 ..	144.0	45.15	31.36	456.0	136.25	29.88
4. M. A. IV Babbur ..	127.0	38.55	30.36	460.0	139.00	30.23
5. M. A. IV 25-25 ..	155.0	48.82	31.50	469.0	139.15	29.67
6. M. A. IV 357-359 ..	183.0	55.63	30.40	484.0	146.74	30.32
7. M. A. IV 76-80 ..	120.0	38.04	31.70	426.0	125.37	29.43
8. M. A. IV 95-98 ..	131.0	38.97	29.75	334.0	113.77	29.63
9. M. A. I Black seed ..	150.0	46.01	30.73	483.0	117.89	30.62
10. Cambodia 440 ..	..	..	..	398.0	119.64	29.91
11. Gadag I ..	167.0	48.51	29.03	446.0	128.22	28.75
12. D. A. II ..	193.0	57.90	30.00	..	..	..

STATEMENT No. 27.

Statement showing the yields of Jola varieties grown in the Botanical Section during the year 1934-35.

Variety	Yield of grain obtained in 3 guntas		Yield per acre	
	Grain in seers	Stalk in lbs.	Grain in ses.	Stalk in lbs.
1. Chitaldrug Jola (Check) ..	18.5	249	241.6	3,320
2. Bili Dodda Jola ..	20.25	255	270.0	3,100
3. Bili Jola Acc. No. 34 ..	20.25	235	270.0	3,133
4. Gannayakanahalli Bili Jola ..	17.5	213	233.3	2,840
5. Mysore Bili Jola ..	21.0	245	280.0	3,266
6. Basavanapada Jola ..	17.5	232	233.3	3,093
7. Ibbani Jola ..	19.0	262	253.3	3,493
8. White Javar ..	20.0	197	266.6	2,626
9. Maldandi ..	20.25	237	270.0	3,160
10. Sorghum No. 2 ..	19.6	250	261.0	3,333
11. Dhagadi ..	20.5	233	270.0	3,106
12. Shahabad ..	21.5	278	286.6	3,706
13. Andapallaga ..	21.0	223	280.0	2,940
14. Parsi Jola ..	16.25	230	216.0	3,066
15. Dhudia ..	17.75	235	236.6	3,133
16. Lamshai ..	18.12	245	241.6	3,266

STATEMENT No. 28.

Ragi, Groundnut Rotation Experiments.

Variety of ragi H. 22.
Sown on 27-6-1934.
Harvested on 11-12-1934.

Variety of Groundnut H.G. 1.
Sown on 21-6-1934.
Harvested on 7-1-1935.

Range F (17-22)

Treatment	1934-35		1934-35	
	Yield per acre in lbs.		Per cent	
	Grain	Straw	Grain	Straw
Ragi after ragi	395	230	100.00	100.00
Ragi after groundnut	490	490	124.00	213.00

H. 22 Ragi variety introduced this year changing the variety H. 40 ragi which was tried for nine years.

STATEMENT No. 29.

Ragi green manurial demonstrations

Green Manure vs. Farm Yard Manure.

Variety of ragi, H.K. 13.
Sown on 9-8-1934.
Transplanted on 9-8-1934.
Sowing in nursery on 6-7-1934.

Harvested on 11-12-1934.
Green manures broad-casted on
28-5-1934.

Range (E. 17-21).

Treatment	Sown				Transplanted			
	Yield per acre in lbs.		Per cent yield		Yield per acre in lbs.		Per cent yield	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
Farm Yard manure, (1,500 lbs. applied on 21st July 1934)	84	132	100.0	100.0	36	60	100.0	100.0
Sannhemp (658 lbs.) ploughed on 21st July 1934	120	132	142.86	100.0	108	120	300.0	200.0
Cowpea (386 lbs.) ploughed on 21st July 1934	48	48	57.14	57.14	72	72	200.0	200.0

* The crop was very poor for want of timely rains.

H. K. 13 Ragi variety introduced this year changing the variety H. 22 ragi which was tried for seven years. Same treatment continued but the plot was divided into two portions one half sown and the other half transplanted.

STATEMENT No. 30.

Ragi Fertiliser Experiments.

Variety of Ragi, H. 22.
Sown on 2-8-1934

Harvested on 21-12-1934.

Range A. (1-15).

Variety	Yield per acre in lbs.		Yield per cent	
	Grain	Straw	Grain	Straw
1. Check	700	802	100.00	100.00
2. Am ₂ So ₄ and Super and KCL.	852	1,000	121.70	124.68
3. Super and KCL.	672	760	96.00	94.76
4. Am ₂ So ₄ and KCL	720	846	102.85	105.48
5. Am ₂ So ₄ Super	686	940	98.00	117.20
6. NaNo ₃ and Super and KCL.	620	980	88.57	122.19
7. Gr. cake and Super and KCL.	740	900	105.70	112.20
8. NaNo ₃ and Gr. cake and Super	612	730	87.43	91.00
2 1 2				
9. Am ₂ So ₄ and KCL. Gr. cake and Super and	560	610	80.00	76.00
2 2				
KCL.				

N.B.—Rotation ragi after ragi as is the general practice in this area.

Farm yard manure at 10,000 lbs. per acre applied on 3rd July 1934.

Ammonium sulphate at 100 lbs. per acre applied on 2nd August 1934.

Superphosphate at 200 lbs. per acre applied on 2nd August 1934.

KCL. (Muriate of potash) at 40 lbs. per acre applied on 2nd August 1934.

Sodium Nitrate at 140 lbs. per acre applied on 2nd August 1934.

Groundnut cake at 260 lbs. per acre applied on 2nd August 1934.

STATEMENT No. 31.

Ragi Varietal Tests.

Rotation of groundnut and 5,000 lbs. of Farm yard manure per acre applied on 30th June 1934.

Sown on 31-7-1934.

Harvested on 18-12-1934.

Range II (1-15)

Variety	1934-35		Average yield of 10 years					
	Yield per acre in lbs.		Per cent yield		Yield per acre in lbs.		Per cent yield	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
Local Hullabele (Check)	688	864	100.00	100.00	1,156.2	1,568.3	100.0	100.0
H. 2	640	812	93.0	94.0	1,214.4	1,605.0	104.9	102.3
H. 22	920	1,120	133.7	129.6	1,436.2	1,600.4	128.5	102.0
H. 39	746	940	108.4	108.8	1,294.5	1,683.2	111.9	107.3
H. 32	792	1,100	115.1	127.3	1,117.6	1,771.4	99.0	112.9
					Average of three years.			
H. 45	666	866	96.8	100.2	1,015.3	1,728.6	..	..
H. 55	552	852	80.2	98.6	1,065.3	1,774.6	..	..

STATEMENT No. 32

Ragi Varietal Tests.

Farm Yard Manure 10,000 lbs. per acre. Same as last year applied on 27th June 1934.

Sown on 29-6-1934.

Harvested on 12-12-1934.

Range J. (1-15).

Variety	1934-35				Average yield of 10 years			
	Yield per acre in lbs.		Per cent yield		Yield per acre in lbs.		Per cent yield	
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw
Local Hulubele (Check)	614	896	100.00	100.00	1,314.1	1,958.9	100.00	100.0
H. 71	772	1,020	125.73	113.84	1,445.0	2,284.2	109.9	116.5
H. 73	582	926	94.78	103.35	1,363.4	2,175.3	103.7	111.3
H. 77	766	1,012	124.75	112.95	1,532.9	2,119.1	116.5	108.1
*H. 22	796	986	114.98	110.00	1,264.0	1,309.0	124.87	..
*H. 45	600	866	97.72	96.65	948.00	1,166.0	93.66	..
*H. 55	610	1,012	101.23	112.95	1,016.0	1,302.0	100.38	..

*N.B.—Average of two years is taken as those varieties were introduced last year.

STATEMENT No. 33.

Seed Drill Test.

Variety, H. 22.
Sown on 2-8-1934.

Harvested on 27-12-1934.

Treatment	Yield per acre in lbs.	
	Grain	Straw
	Lbs.	Lbs.
Country drill	635	665
Lift drill	680	650
Disc drill	627.5	600
Vertical drill	572.5	485

STATEMENT No. 34.

Groundnut Manurial Experiments.

A Variety of Groundnut H.G. 1.

Sown on 5-7-1934.

Range B (1-15) or Sub-plots (1-30).

Harvested on 26-1-1935 to

(Last year H. 2. Ragi).

6-2-1935.

Treatment	1934-35 (Dry pods)		Average yield of Four years		Percentage yield taking limed series as Check
	Yield per acre in lbs.	Percent yield	Yield per acre in lbs.	Percent yield	
<i>Limed series : Plots (5 to 17).</i>					
Check	1,155	100.00	992.70	100.00	100.00
Am ₂ So ₄ , Super and KCL. ..	1,306	113.07	1,114.60	112.30	112.30
Super and KCL.	1,226	106.15	1,051.25	105.90	105.90
Super only	1,240	107.36	1,113.10	112.10	112.10
<i>Unlimed series : plots (18 to 30).</i>					
Check	800	100.00	907.25	100.00	69.00
Am ₂ So ₄ , Super and KCL. ..	952	119.00	1,016.25	112.00	..
Super and KCL.	960	120.00	988.25	108.90	..
Super only	900	112.50	953.10	105.00	..

Treatment : -

Farmyard manure : 5,000 lbs. per acre applied on 12th June 1934.

Ammonium sulphate : 50 lbs. per acre applied on 2nd July 1934.

Super 320 lbs. per acre applied on 2nd July 1934.

KCL. 60 lbs. per acre applied on 2nd July 1934.

Lime No lime applied this year.

STATEMENT No. 35.

Groundnut Manurial Experiments.

Variety of groundnut, H.G. 1.

Sown on 5-7-1934.

Range B. (1-15) or Sub-plots (1-30).

Harvested on 26-1-1935 to

Last year H. 2 ragi.

6-2-1935.

Treatment	1934-35 (Dry pods)		Average yield of four years	
	Yield per acre in lbs.	Percent yield	Yield per acre in lbs.	Percent yield
<i>Limed series (5-17).</i>				
Check	1,155	144.37	992.70	109.42
Am ₂ So ₄ , Super and KCL. ..	1,306	163.25	1,114.60	122.85
Super and Kel	1,226	153.25	1,051.25	115.87
Super only	1,240	155.00	1,113.10	122.68
<i>Unlimed series : Plots (18-30).</i>				
Check	800	100.00	907.25	100.00
Am ₂ So ₄ , Super and Kel. ..	952	119.00	1,610.25	112.00
Super and Kel.	960	120.00	988.25	108.90
Super only	900	112.50	953.10	105.00

Treatment :—

Farm Yard manure 5,000 lbs. per acre applied on 12th June 1934.

Ammonium sulphate 50 „ do 2nd July 1934.

Super 320 „ do 2nd July 1934.

Kel. 60 „ do 2nd July 1934.

Lime No lime applied this year.

Am₂ So₄— 15 lbs. at Rs. 4-12-0 per cwt. Rs. 0-10-2 Rates taken at the time of application.

Super— 288 „ „ 3-8-0 do „ 8-13-4

Kel. 36 „ „ 6-0-0 for 84 lbs. „ 2-9-0

Total Rs. 12-0-6

STATEMENT No. 36.

G. Range (1-15) Groundnut Varietal Experiments in rotation with Ragi varieties.
 Sub-plots (1-22) each plot of groundnut is 20'×20'—sown on 5-8-1934 to 7-8-1934.

Sl. No.	Name of Variety								Yield calculated per acre in lbs.*
<i>I. Series.</i>									
1	Mauritius	..	..	..	..	..	..	..	1,121.67
2	H. G. 1	..	..	..	..	..	..	..	1,176.12.
3	Sogatur	..	..	..	..	..	..	..	1,076.22
4	Spanish	..	..	..	..	..	..	..	1,263.24
5	Valencia	..	..	..	..	..	..	..	729.63
6	Virginia	..	..	..	..	..	..	..	1,176.12
<i>II. Series.</i>									
1	Mauritius	..	..	..	..	..	..	..	1,134.55
2	African Red	..	..	..	..	..	..	..	1,230.57
3	H. G. 2	..	..	..	..	..	..	..	653.40
4	Tennessee	..	..	..	..	..	..	..	1,197.70
5	Spanish Improved	..	..	..	..	..	..	..	882.09
6	Small Japan	..	..	..	..	..	..	..	1,045.44
<i>III. Series.</i>									
1	Mauritius	..	..	..	..	..	..	..	1,197.70
2	Nigeria	..	..	..	..	..	..	..	1,263.24
3	Carolina	..	..	..	..	..	..	..	1,121.67
4	Big Japan	..	..	..	..	..	..	..	1,361.25
5	Mysore Local	..	..	..	..	..	..	..	664.29
6	Senegal	..	..	..	..	..	..	..	1,306.80

STATEMENT No. 37.

Groundnut Varietal Tests.

These series of tests were started in the year 1932-33. Comparative yield of three years are given in the tabular statement. Average yield of three years is given in the last column for reference. The varieties were sown in plot laid in Latin Squares. Only the average figures are given below.

Sl. No.	Varieties	1932-33	1933-34	1934-35	Average of three years (Dry pods) per acre in lbs.
1	<i>First group—Spreading varieties.</i>				
1	Mauritius	1,388.47	1,224.22	1,121.67	1,244.78
2	Sogatar	1,433.85	1,564.16	1,067.22	1,356.41
3	Virginia	1,321.95	1,397.18	1,176.12	1,299.41
	<i>Erect varieties.</i>				
4	Spanish	1,597.20	952.87	1,263.24	1,271.10
5	Valencia	1,216.05	698.05	729.63	881.24
6	H. G. 1	1,170.67	1,143.16	1,176.12	1,163.41
	<i>Second group—Spreading varieties.</i>				
1	Mauritius	1,216.05	997.52	1,034.55	1,082.70
	<i>Erect varieties.</i>				
1	African Red	1,125.30	1,448.37	1,230.57	1,268.08
2	H. G. 2	544.50	816.75	653.40	671.55
3	Tennessee	1,252.35	903.87	1,197.70	1,117.97
4	Spanish improved	1,393.92	825.46	882.09	1,033.82
5	Small Japan	1,343.10	925.65	1,045.44	1,104.73
	<i>Third group—Spreading varieties.</i>				
1	Mauritius	1,589.94	1,045.44	1,197.70	1,277.69
2	Nigeria	1,372.14	1,045.44	1,263.24	1,226.94
3	Carolina	1,470.15	1,263.24	1,121.67	1,285.02
4	Big Japan	1,542.75	1,154.34	1,361.25	1,352.78
5	Mysore Local	825.82	827.64	664.29	772.58
6	Senegal	1,488.30	1,197.90	1,306.80	1,331.00

STATEMENT No. 38.

Paddy manurial experiments (Oil cake series).

Variety—Gunasale.
Sown on 6-9-1934.

Harvested on 28-1-35.

Range C. (18 b-24 b).

Series	Treatment	Grain		Straw	
		Percent	Lbs. per acre	Percent	Lbs. per acre
1	Check (Hongey Leaf)	100.0	680	100.0	760
2	Hongey leaf and Gr. cake, 250 Super 150 lbs.	169.1	1,150	197.3	1,500
3	Hongey leaf and Gr. cake 250 lbs. Bone- meal 100	148.5	1,010	151.3	1,150
4	Hongey leaf and Hongey cake 500 lbs. and Super 150 lbs.	158.8	1,080	152.6	1,160
5	Hongey leaf and Castor cake 500 lbs. and Super 150 lbs.	195.6	1,330	169.7	1,290
6	Hongey leaf and Castor cake 500 lbs. and Bone meal 500 lbs.	166.2	1,130	159.2	1,210

Organic manure :—Hongey leaf at 3,000 lbs. per acre applied in general.

Artificial :— Bone meal at 100 lbs. per acre.

Super at 150 lbs. per acre.

Oil cakes :—

1. Castor cake 500 lbs. per acre.

2. Hongey cake 500 lbs. per acre.

3. Groundnut cake 250 lbs. per acre.

STATEMENT No. 39.

Artificial manure with and without organic manures. (Area one acre and 26 guntas.)

Variety—Gunasale.
Sown on 25-8-1935.

Harvested on 22-12-1935.

Range C. (1-17).

Treatment	Grain		Straw	
	Percent	Lbs. per acre	Percent	Lbs. per acre
Check (Organic)	100.0	1,760	100.0	1,712
No Manure	63.6	1,120	71.3	1,225
Organic and Am_2So_4 (150) and Super (250)	115.0	2,025	71.5	2,005
Am_2So_4 (150) Super (250) No Organic	98.3	1,730	106.3	1,820
Organic and Am_2So_4 (150) and Super (335)	105.9	1,865	117.1	2,005
Am_2So_4 (150) Super (335) No Organic	87.4	1,540	90.2	1,545
Am_2So_4 (150) Super (500) and Organic	115.6	2,035	111.2	1,905
Am_2So_4 (150), Super (500) No Organic	97.7	1,720	101.3	1,735

STATEMENT No. 40.

Oil cake series.

Variety—Gunasale.
Sown on 6-9-1934.Harvested on 28-1-1935.
Range D. 18 b. 24 b. (1-13) 26
guntas.

Only Check Plots receive hongey leaf.

Treatment	Grain		Straw	
	Percent	Lbs. per acre	Percent	Lbs. per acre
1. Check. Hongey leaf only ..	100.0	910	100.0	720
2. Gr. cake 250 lbs. Super 150 and Hongey leaf ..	117.6	1,070	126.4	910
3. Gr. Cake 250 lbs. and Bone meal 100 and Hongey leaf ..	81.3	740	86.1	670
4. Hongey cake (500 lbs.), Super (150 lbs.) Hongey leaf ..	119.8	1,090	122.2	880
5. Castor cake (500), Super (150) and Hongey leaf ..	116.5	1,060	132.0	950
6. Castor cake (500), Bone meal (100) and Hongey leaf ..	102.2	930	125.0	900

General dose of Hongey leaf at 3,000 lbs. per acre for all the plots.

Oil cakes :— 1. Groundnut cake at 250 lbs. per acre.

2. Hongey cake at 500 lbs. per acre.

3. Castor cake at 500 lbs. per acre.

Artificial :— 1. Bonemeal 100 lbs. per acre.

2. Super 150 lbs. per acre.

STATEMENT No. 41.

Paddy Varictal Experiments, 1934-35.

Seedlings, 31 days.

Transplanted on 8-8-1934.

Harvested on 4-12-1934

and 15-12-1934

Range C. (25-35). Chess Board Method.

Variety	Yield per acre in lbs.		Percentage yield		Percent yield of six years		Percent yield		No. of days
	Grain	Straw	Grain	Straw	Grain	Straw	Grain	Straw	
Doddabele (Check) ..	2,289.6	2,898	100.00	100.00	1,945.86	2,624.45	100.00	100.00	150
Hassan Doddi ..	2,070	2,404.8	90.4	82.9	1,905.1	2,086.38	97.9	79.5	150
Sannabhattha ..	2,346	2,706	102.4	93.1	2,156.72	2,883.3	110.83	109.86	161
Gunasale ..	2,550	2,706	111.3	93.3	2,391.55	3,211.55	122.96	122.39	161
G. E. B. 24 ..	2,238	2,694	97.7	92.9	2,139.45	2,447.1	109.94	93.24	161
D. Range 25-35 Strip method.									
Doddabele (Check) ..	3,576	4,206	100.00	100.00	2,287.87	2,975.20	100.00	100.00	150
Hassan Doddi ..	3,624	3,930	101.3	93.4	2,110.6	2,546.8	92.25	85.6	150
Sannabhattha ..	2,976	4,146	83.2	98.5	2,448.6	3,333.6	107.1	112.04	161
Gunasale ..	3,708	4,680	103.6	111.1	2,671.0	3,462.4	116.74	116.40	161
G. E. B. 24 ..	3,672	4,272	102.6	100.3	2,379.8	2,935.34	104.01	98.32	161

STATEMENT No. 42

Sugarcane varietal tests for 1934-35.

Date of planting.		A Range 30-33.		Date of Harvest	
No.	Variety	No. of canes per acre	Wt. of canes per acre in tons	Percent	
1	H. M. 320	17,969	24.0	100.0	
2	Local Striped	9,000	13.3	55.4	
	H. M. 544 Striped	41,650	22.84	95.2	
4	H. M. 500	17,136	26.2	109.1	
5	H. M. 544	39,865	23.5	97.9	

STATEMENT No. 43.

Hebbal Farm Varietal Tests of 1934-35.

Date of planting, 23-1-1934.		B. Range (33-36).		Date of harvest, 18-2-1935.	
Variety		No. of canes per acre	Cane yield per acre in tons	Percentage yield	
H. M. 320		20,224	23.4	100.0	
H. N. 602		30,208	21.0	89.7	
H. M. 603		26,112	17.8	76.0	
H. M. 609		27,904	22.9	97.8	
H. M. 607		12,800	23.6	100.8	

STATEMENT No. 44.

Hebbal Farm Varietal Tests of 1934-35.

Date of planting 25-1-1934.		B. Range (25-28).		Date of harvest 21-2-1935 to 27-3-1935.	
No.	Variety	No. of canes per acre	Cane yield per acre in tons	Percentage yield	
1	H. M. 320	9,344	14.5	100.0	
2	P. O. J. 2878	22,144	13.7	94.5	
3	E. K. 28	16,512	12.2	84.1	
4	P. O. J. 100	16,896	14.6	100.7	
5	H. M. 606	16,896	22.1	152.3	
6	H. M. 608	67,328	44.8	308.9	

STATEMENT No. 45.

Sugarcane Manurial Experiments of 1934-35.

Date of planting.		Variety H.M. 320.		Date of harvest.	
No.	Treatment	Average No. of canes per acre	Cane yield per acre in tons	Percent yield	
1	Check	28,725	25.99	100.0	
2	Gr. cake (1 ton per acre) .. .	24,625	33.1	127.3	
3	Super 3 cwts. and Am ₂ So ₄ 5 cwts. .. .	23,225	29.7	114.3	
4	Niciphos 3 cwts. and Am ₂ So ₄ 2 cwts. .. .	21,250	16.3	101.2	
5	Super 3 cwts. and Gr. cake 12½ cwts. .. .	22,750	29.3	112.7	
6	Am ₂ So ₄ 8 cwts. per acre .. .	27,250	35.8	137.7	
7	Super 3 cwts. and Gr. cake 1 ton per acre .. .	26,875	38.0	146.2	

STATEMENT No. 46.

Hebbal Farm Cultural Experiments 1934-35.

Variety H.M. 320.

Date of harvesting 1-3-1935 to
7-3-1935.

Date of planting 13-1-1934.

Range A. Area 16 Guntas. Plat (18-21).

Side shoots retained				Side shoots removed			
Series	No. of Rows	No. of canes of four rows	Wt. of canes of four rows	Series	No. of Rows	No. of canes of four rows	Wt. of canes in lbs. of four
			Lbs.				Lbs.
1	4	484	1,195	1	4	544	1,159
2	4	540	1,168	2	4	610	1,208
3	4	485	1,062	3	4	640	1,194
4	4	560	1,270	4	4	800	1,465
5	4	560	1,180	5	4	620	1,240
6	4	620	1,329	6	4	610	1,079
Total	24	3,249	7,204	Total	24	3,824	7,345
Per acre	125	176,257.3	16.75 tons	Per acre	125	19,813	17.1 tons

STATEMENT No. 47.

Variety						Average yield of cured Tobacco of 200 plants in lbs.	
Anekivi No. 1	..	..	..	..	..	14.3 lbs. × 25=	357.5 lbs.
Anekivi No. 2	..	..	..	..	..	21.9 „ ×	=547.5 „
Anekivi No. 3	..	..	..	..	..	9.7 „ ×	=242.5 „
Kathekivi	..	..	..	..	..	22.5 „ ×	=562.5 „
Balepatte	..	..	..	..	..	21.9 „ ×	=547.5 „
Choulkudi	..	..	..	..	..	28.5 „ ×	=712.5 „
Kongamadri	..	..	..	..	..	30.1 „ ×	=752.5 „
Pusa Hybrid	..	..	..	..	..	39.6 „ ×	=990.0 „
Virginia	..	..	..	..	..	18.8 „ ×	=470.0 „
Mary lands	..	..	..	..	..	9.0 „ ×	=225.0 „
American best mixed	..	..	..	..	..	18.0 „ ×	=450.0 „
Harrison special	..	..	..	..	..	20.7 „ ×	=517.5 „
Pusa	..	..	..	..	..	9.0 „ ×	=225.0 „

REPORT OF WORK IN THE AGRICULTURAL ENGINEERING SECTION FOR THE YEAR 1934-35.

Building Works. Estimates and plans totalling Rs. 9,816-0-0 were prepared for the year, and the work was executed to the extent of Rs. 8,188-0-0. In addition, petty works carried out on the several farms were inspected and scrutinised.

Hebbal Workshop.— In order to estimate the actual amount of work turned out in the workshop, the work order system was introduced and 448 jobs have been carried out for the year. These comprise (1) repairs to the machinery, and implements in the Hebbal Farm, the Hebbal Dairy, the Agricultural School and the Serum Institute and (2) manufacture of requirements for the laboratory, the Central Implement Depot and the farms. The total value of all the important manufactures in the Hebbal Workshop for the several sections of the Department aggregates to Rs. 2,712.

On a requisition from the Madras Agricultural Department, a Grass Hopper Trap of the type designed for the Department was made and supplied through the Entomologist. Another from the Nizam's State for the supply of six shovel cultivators was taken up, and 45 cultivators were made in the Hebbal Workshop and supplied. The following bee-keeping appliances were made and supplied to the Entomological Section :—

Bee Hives	..	..	..	..	..	2 Dozens.
Decoy Hives	..	..	..	..	..	3
Examination Frames	..	..	..	..	..	3
Wax Scrapers	..	..	..	..	..	12
Honey Extractors	..	..	..	..	..	6
Glass Shuttered Bee-hive	..	..	..	..	..	1
Large Bee-hive of the English Pattern	..	..	..	..	..	1

In addition, requisitions for the supply of small indigenous implements as Kuntas, furnace equipment and parts of ploughs as bar points, bridles and other fixtures were attended to. Steel trusses were built up for the cattle stall of the Serum Institute, and the cattle stall on the Marthur Farm, and all the erection of the iron work in both the places was done by the workshop staff.

Machinery.— The machinery in all the farms were inspected and the needful repairs carried out wherever attention was required. An addition was made to the stock of machinery in the Department by the purchase of a pumping outfit for the Basur Kaval. The Engine working the power chaff cutter on the Cattle Breeding Station, Ajjampur, was put on permanent foundations. The new chaff cutter purchased for the Hebbal Farm was put into service and cut about 175 tons of fodder. Some of the machinery in the department are old and uneconomical to be put into service. It is high time that they are replaced by machines of improved design.

Implement Test and Design.— To encourage local manufacture of ploughs, the light plough called the Eureka, made by Mr. Channiah of Hassan, was worked in the fields in his presence and on the suggestion of a few points to rectify the defects, an improved one was made and sent over to the Hebbal Farm for trial. It was examined in every detail and put to test on the field. It ploughed an acre of land satisfactorily and the results are recorded in the end. The only defect is the quicker wear of the abrasive parts, and this is a feature which cannot be avoided by the local manufacturers who are not able to procure the right grade of steel.

With a view to manufacture cheap shares, an attempt was made on the initiative of the Head-Master, Ramakrishnakrishisala, to manufacture shares out of the rejected railway sleepers. A few were made and tested on the Hebbal Farm and the Sala fields. These were found to work as much as the imported shares, the turn-over being about five acres in an average soil. It is possible to make a share without bolts and nuts for 8 annas or for about 12 annas, with bolts and nuts.

Two steel shares of the Kolar Mission type and two ridge shares manufactured by Cooper Engineering Works of Satara were supplied by the firm for trial. They were sent to the Irwin Canal Farm and the Mandya Sugar-cane Farms for being tested.

A power attachment designed by Messrs. Madurai Mudaliar & Sons of Bangalore was, at the request of the firm, tested on the Hebbal Farm, power being taken through the counter-shaft in the workshop. Forty tons of cane were crushed in all. The machine stopped once on account of a breakage and functioned without trouble after a new part was put in. The results are recorded in the appendix.

The trials of the improved seed drill were continued this year and its work was quite satisfactory. A new feature was added to it for making it work with seeds of a bigger size as Jola, Gram and Cotton. It was demonstrated at the Mysore Dasara Exhibition, where it was awarded a Gold Medal. It has reached a stage when it is necessary to make a few of them and popularise their use through the District staff. With this end in view, a scheme has been suggested for the grant of an allotment to manufacture 20 seed drills.

A six-shovel cultivator of a light design and capable of working as well as the Kolar Mission cultivator was made and tried on the Hebbal Farm. On its satisfactory work, two dozen cultivators at a cost of Rs. 6-12-0 each were made and supplied to the Central Implement Depot, the cost being a little more than half the cost of the Kolar Mission cultivator.

A cultivator of 13 tynes running on wheels was made at the Hebbal Farm Workshop and shown at the Dasara Exhibition. It was appreciated, but the general opinion was in favour of one of a smaller width. This will be attempted in the coming year.

The introduction of the iron plough in place of the wooden plough is recognised for over twenty years, and attempts are being made for some years by a number of local artisans to manufacture them. Since the last five years, the Department came to know through types of Kolar Mission, Eureka, and Meston ploughs made by a few blacksmiths in Bangalore, Mysore and Hassan Districts and sent up for exhibition and trials on the Government farms, that ploughs could be made satisfactorily in the local areas. In some of the places, ploughs are being sold for a small profit during the season. To gather information as to the several places where this is being done, an attempt was made this year to collect statistics of all plough manufacturers in the State, and a report was submitted as to the possibility of encouraging implement-manufacture as a rural industry.

Duty of Water Experiment.—The estimation of water requirements for the paddy crop on the Vanivilas Sagar tract was continued for the monsoon crop of 1934 and summer crop of 1935 on the Babbar Farm. The results are given in tabular forms in the appendix. The water-metre taken on loan for the previous crop was retuned and a new 2" metre was purchased for the Department and fitted up for registering the amount of water discharged into the plots.

Service.—The Departmental Tractor was put in service to plough the estates of two applicants. It worked 12 acres of land belonging to Mr. C. V. Narasimha Iyengar in Muthikere village, Bangalore, at a cost of Rs. 7-2-6 an acre. The other party, Mr. Muniswamappa, Public Works Contractor, had 23.05 acres of land near Yelahanka ploughed up at a cost of Rs. 6-1-9 an acre. The tractor is in the seventh year of its work and has served beyond the stipulated time of full service. Though a tractor cannot claim to be an economic unit for the Mysore raiyat, the universal interest in power farming in an age of advanced agriculture is a feature which should not be overlooked. Tractor design has also improved, and there are tractors in the market, which can render service at a comparatively low cost. I consider that a Government Department should own one, and supply it to the raiyats. I therefore suggest that a crude oil tractor of a reliable design may be got to replace the present one.

At the request of the Chief Commandant, the Hessarghatta Farm was inspected for purposes of giving advice on the improvement of the irrigation facilities in that area.

To remove the distress in the lands of Mr. Shankarasetty whose crop of sugar-cane in Challaghatta, Bangalore District, was withering on account of continuous drought, the Hebbal pumping outfit was worked on his area for a period of 23 days between 19th September 1934 to 11th October 1934, till rains came in.

Exhibits of the section were sent to Mysore Dasara Exhibition, Devanballi Jatra and Channapatna Exhibition. Sugar-making demonstration was held at the Jeevanarayanakatte Farm. School work comprising 20 hours a week was attended to by the Assistant Agricultural Engineer, who held charge of the workshop and the machinery on the Hebbal Farm.

M. G. SINGARACHAR
Agricultural Engineer

RESULTS OF WORK OF THE EUREKA PLOUGH.

Manufactured by Mr. Chennayya of Hassan.

Farm.—Hebbal.

Area.—One acre.

Soil.—Light Loam ploughed and left fallow.

PloUGH	Weight of plough in lbs.	Weight of share in lbs.	Projection of point from share end	Section of plough	Remarks
Before Trial	37.5	Lbs. Oz. 1 4	4.5"	$\frac{1}{4}$ "	Good penetration of point and good in- version.
After Trial	37.0	1 3	4.4"	$1\frac{1}{5}$ "	

RESULTS OF CANE CRUSHING THROUGH POWER ATTACHMENT.

Manufactured by Messrs. P. M. Madurai Mudaliar & Sons, Bangalore.

Hebbal Farm.

Variety of Cane	Weight of cane crushed in lbs.	Weight of Juice extracted in lbs.	Per cent of extraction	Calculated output in lbs. per ton	Remarks
Local Pattatti	1,370	866	63.1	316	Jaggory did not get for one charge.
H.M. 320	2,457	1,491	60.7	378	
H.M. 509	3,475	2,004	57.7	310	
H.M. 544	2,807	1,796	64.0	303	
H.M. 602	2,158	1,206	55.9	309	
H.M. 603	2,975	1,668	56.0	331	
POJ. 2873	2,154	1,237	57.4	304	
E.K. 28	1,921	1,140	59.3	325	
H.M. 606	3,234	2,000	61.8	326	

Statement showing the Duty of Water and Yield for the Monsoon crop of Paddy.

Farm.—Babboor.

Extent.—1/20 acre.

Area.—Survey No. 523.

Variety of Paddy.—Halubbalu

Broadcast Paddy, 118 days.

Plot	Number of irrigation	Quantity of water in gallons	Acre inches of irrigation	Rainfall in inches	Total acre inches	Calculated yield of grain in srs. per acre	Calculated yield of straw in lbs. per acre	Remarks
1	31	44,339	39.09	9.63	48.72	730	2,400	
5	29	38,095	33.58	9.63	43.21	440	3,080	
9	29	37,934	33.44	9.63	43.07	500	1,760	
Average	30	40,122	35.37	9.63	45.00	557	2,080	
Transplanted Paddy, 123 Days.								
2	27	36,040	31.77	9.63	41.40	530	1,520	Alkaline and not fit for consideration.
6	28	39,571	34.88	9.63	44.51	600	1,880	
10	28	28,642	25.25	9.63	34.88	180	600	
Average	28	34,751	30.63	9.63	40.26	565	1,700	
				Add nursery irrigation ..	10.78			
				Total ..	51.04			

Eng. Section.

Statement showing the Duty of Water and Yield for the Summer Crop of Paddy.

Farm.—Babboor.

Extent.—1/20 acre.

Area.—Survey No. 523.

Type of Paddy.—Halubbalu.

(Broadcast Paddy, 111 days).

Plot	Number of irrigation	Quantity of water in gallons	Acre inches of irrigation	Rainfall in inches	Total acre inches	Calculated yield of grain per acre in srs.	Calculated yield of straw in lbs. per acre	Remarks
2	44	52,898	46.63	3.36	49.99	948.6	3,080	
4	44	64,176	56.57	3.36	59.92	698.6	2,180	
6	43	39,666	34.97	3.36	38.33	1,108.6	2,560	
Average	44	52,247	46.06	3.36	49.42	918.6	2,606.7	
Transplanted Paddy, 119 Days.								
1	32	40,006	35.27	3.04	38.31	638.6	2,340	
3	32	36,460	32.14	3.14	35.18	753.6	2,700	
5	32	33,472	29.51	3.04	32.55	793.6	2,180	
Average	32	36,646	32.31	3.04	35.35	728.6	2,406.7	
			Add nursery irrigation		9.73			
			Total		45.08			

Statement showing the Duty of Water and Yield for the Monsoon Crop of Paddy.

Farm.—Babboor.

Extent.—1/20 acre.

Area.—Survey No. 523.

Variety of Paddy.—G.E.B. 24.

Broadcast Paddy, 137 days.

Plot	Number of irrigation	Quantity of water in gallons	Acre inches of irrigation	Rainfall in inches	Total acre inches	Calculated yield of grain in srs. per acre	Calculated yield of straw in lbs. per acre	Remarks
3	32	39,940	35.21	9.63	44.48	520	2,380	
7	32	47,386	41.77	9.63	51.43	340	1,620	
11	32	36,738	32.39	9.63	42.02	155	1,060	Alkaline, not worth considering.
Average	32	41,355	36.46	9.63	46.09	430	2,000	
Transplanted Paddy, 145 Days.								
4	31	50,907	44.88	9.63	54.61	520	1,660	
8	29	35,298	31.12	9.63	40.75	400	1,500	
12	28	30,866	27.21	9.63	36.84	480	1,880	
Average	29	39,024	34.40	9.63	44.03	467	1,680	
			Add nursery irrigation		10.78			
			Total		54.84			

Eng. Section.

REPORT OF THE GOVERNMENT EXPERIMENTAL FARM, HIRIYUR, FOR THE YEAR 1934-35.

Seasonal Conditions.—The total rainfall during the year was 15·57" as against 32·86" in 1933-34 and 20·47" being the average of the past 18 years. The precipitation of this quantity was on 47 days as against 59 in 1933-34. It fell rather too late for the sowing of cotton and just in time for jola. It was too scanty for all crops during the growing period, more than three-fourths of the quantity having fallen before sowing them alone, i.e., in July and October. Vanivilas Sagara continued to be full, i.e., over 125 feet of water and continuous supply of water was allowed for growing monsoon and summer paddies.

Farm Buildings.—All the buildings on the Farm continue to be dilapidated and dangerous for habitation, developing big cracks in the corners. Building of the remaining half of the clerk's quarters was completed during the year.

Machinery.—The same old Peter Horizontal Engine was worked for crushing the cane crop of the Farm and ginning cotton and another old Peter Patent Horizontal Engine was made use of for pumping water for the paddy crop grown in connection with the duty of water experiments.

Sugar-cane Mill.—Chattanooga No. 192 of Messrs. Volkart Brothers, purchased and tried last year, was tried for crushing the cane crop of the Farm. The percentage of extraction varied from 58 to 60, taking more than 15 to 17 cwt. of cane.

Gins.—Gins of the Farm were worked for 56 days and the quantity of lint ginned amounted to 2,383 maunds. 3 lbs. of the raiyats and 45 maunds and 11 lbs. of the Farm and the former brought in a revenue of Rs. 1,191-9-6 as against Rs. 1,251-7-6, last year thus releasing about 7,259 maunds of seed.

New seed drill of the Engineering Section.—A modified form of drill of 1933-34 model was tried in sowing not only jola but cotton also with the results recorded, (*vide* Statement II).

Live-Stock.—Breeding Bull, Devendra, supplied in 1928, died on 31st October 1934, in the Hiriyr Dispensary when it was an in-patient suffering from some lung worm disease for three months.

Out of the six old pairs of bullocks, bullock "Gurmia" died on account of old age on 7th December 1934.

Two pairs, viz., Chelva and Chennabasava, Gopala and Mahadeva and the single bullock Haria are getting too old for work.

In addition to two pairs of bullocks supplied last year from Cattle Breeding Station, Ajjampur, under the scheme sanctioned in Government Order No. D. 2193-4—L. and A. 17-32-2, dated 21st November 1932, six more pairs were received from the Station during the year. Thus the strength of the Farm animals by the end of the year was

5 old unfit for work.
6 old good for work.
12 new and yet to be trained for work.

A. DRY AREA.

The total acreage is 90 acres and 15 guntas excluding bunds, roads and buildings. Only 66·01 acres were under cultivation with the following crops including 0·09 acres of cylinder.

The areas ploughed with Kirloskar and Bahadur ploughs in connection with the trial of these ploughs are getting infected with Hariyali (*Cynodon dactylon*). Digging of these patches has to be taken up next year onwards to free these from the weed.

1. *Cotton.* (a) *Breeding.*—9·61 acres of S. No. 164 b ii and 165 a were devoted for this work done by the Botanical Section and the results of the same are to be found in the report of that section.

(b) *Manurial.*—1·8 acres of S. No. 164 a were devoted for the continuation of the trial of the artificial fertilizers on this as well as on Jola and the residual effect

of the same on cotton in the two years rotation, jola first year and cotton second year by the Agricultural Chemist whose report deals with the results.

(c) *Multiplication of Improved Strains*.—S. 69 and H. 190 (18.53 acres of 164 a ii, ci, 218 c, d, g and h.)

Comparable	Date of sowing 18th October 1934			Per acre	
	1st picking	2nd picking	Total		
			Lbs. Ozs.	Lbs.	Ozs.
S. 69 (2.5 acres in 164 ci. in all the three repetitions).	7-4-1935	20-5-1935	88 3	39	3
H. 190 (2.25 acres in 164 ci. in all the three repetitions).	16-4-1935	22-5-1935	62 0	27	9
Bulk S. 69 (0.66 acres in S. No. 164 a ii.	....	....	18 14	28	10
1.30 acres in S. No. 164 ai.	7-4-1935	20-5-1935	17 8	13	7
Do (1.94 ac. in S. No. 218 d)	....	....	61 0	31	7
Do (2.69 ac. in S. No. 218 g)	....	....	259 8	100	0
Do (3.39 ac. in S. No. 218 h)	....	....	173 8	51	3
H. 190 (3.54 ac. in S. No. 218 c) .. (.60 ac. under drill trial)	16-4-1935	22-5-1935	185 6	52	6
17.93 acres.					

About 17 maunds and 24 lbs. of pure well cleared seeds of selection 69 will be made available for distribution to "A" seed farm growers of the cotton area.

The average yield of cotton in the Farm area of 20.33 acres (excluding the breeding area under Botanical Section) works up to two maunds per acre as against 9.5 maunds in 1933-34.

Insect Pests and Diseases of Cotton.—The attack of stem borer was observed to be severe.

2. *Jola*. (a) *Breeding*.—9.54 acres in S. No. 164 bi and 165 a were devoted for this work done by the Botanical Section in whose report the results are dealt with.

(b) *Manurial*.—1.8 acres in S. No. 165 c iii were devoted as for cotton for the trial of artificial fertilizers on this crop by the Agricultural Chemist whose report deals with the results.

(c) *For Fodder*.—12.63 acres in S. No. 165 c ii and iv and 218 a and b were put under jola for fodder. The yields were as follows:—

S. No.	Area in acres	Yield per plot		Yield per acre	
		Grain in Srs.	Straw in lbs.	Grain in srs.	Straw in lbs.
165 c. ii	1.49	920	11,238	137	1,672½
	4.78				
218 a	2.44				
b.	2.87				
	12.03	1,302	17,591	..	..
(10 acres under drill trial.)					

(d) *Trial of Jola Seed stocked in under-ground Cellars.*— (1·32 acres in S. No. 228) sent by the Assistant Director of Agriculture, Shimoga, to test their germination capacity and trial. The results of the germination are as follows :—

Talavatte village	Percentage of purity	Date of putting the seed for germination	Percentage germinated on		Total
			3-11-1934	4-11-1934	
1. Dodmana Siddiah ..	95	1-11-1934	86	4	90
2. P. Ramappa ..	90	Do	nil	nil	nil
3. Sannathimmiah ..	95	Do	72	16	88
4. Kevelappa ..	95	Do	76	8	84
5. Kabbudantina jola ..	95	Do	78	8	86

None of them flowered and put in earheads. Plants were sickly all through. Average yield per acre on the above 15·75 acres only excluding 9·5 acres of Botanical section works up 106 seers of grain and 4·61 tons of straw as against 58 seers of grain and 0·37 tons of straw in 1933-34.

Insect Pests and Diseases.—The attack of borer was observed to be less severe than that of last year but infestation of striga was as bad as ever.

3. *Wheat.*—0·5 acres in S. No. 164 c ii b were devoted on this crop by the side of the Bengalgram in the Katte. The crop was free from rust this year and yielded 101 seers, i.e., 202 seers per acre as against 40 seers in 1933-34. The variety is a local one sown on 13th November 1934 and harvested on 11th February 1935.

4. *Bengalgram.*—1·61 acres in S. No. 164 c ii and 165 c. v. in two blocks of two Kattes unfit for growing principal dry land crops, viz., cotton and jola were sown with this crop on 13th November 1934 and harvested on 10th February 1935. The yield amounted to 143 seers per acre as against 110 seers in 1933-34. The crop was free from the attack of caterpillars which was usual all these years.

5. *Sunnhemp.*—4·09 acres in S. No. 218 E ii and f were devoted to this crop but the crop was very badly attacked with insects and yielded no seed at all. Only half a ton of stalks were harvested.

6. *Linseed.*—0·5 acres in S. No. 218 E i was devoted to this crop tried for the first time as per instructions of the Director in memo No. Roc. 39—Hc. 86—34-35, dated 22nd August 1934. It was sown on 7th November 1934 and harvested on 5th March 1935 and yielded only 10 seers of seed. The crop seems to be a very delicate one.

7. *Sissal.*—Four acres in S. No. 218 E i remained the same as that planted in 1924-25. Many plants are polling for three years and are being removed. Details of harvest of leaves made are as follows :—

No. of plants	Weight of leaves	Average Weight of green leaves per plant	Fibre in lbs.	Percentage of fibre to leaves
1933-34, Harvested in October 1933 .. 120.	Lbs. 3,242	Lbs. 27	143	4·4
1934, May-June, II (a) polled plants ..	13,422	.....	585	4·3
In October-November (b) 1,243 ..	21,790	17·5	730	3·3
December 1934, harvest III (a) polled plants.	8,588	.....	224	1·3
(b) 408 ..	8,819	21·6		

B. WET AREA.

Total acreage is 128 acres 11 guntas. Excluding 39·047 acres occupied by roads, buildings, drains and grazing grounds, only 88·955 acres were cropped as follows :—

	Acres.
1. Sugarcane	14·50
	0·26
2. Tobacco (in monsoon)	1·00

Hiriyur Farm.

	Acres
3. Cotton	9.37
4. Sunnhemp	14.575
5. (a) Paddy in monsoon	15.00
(b) Groundnut .. 9.00 acres.	
(c) Sunnhemp .. 2.75 "	
(d) Paddy in summer .. 3.72 "	
6. Jola (monsoon)	12.50
" (summer)	16.95
7. Horsegram (monsoon)	3.00
8. Linseed (monsoon)	0.50
9. Plantains	5.00 interplanted with cocoanuts.
10. Cocoanuts	8.75
11. Areca garden, nursery and old orchard	1.25
12. Nursery of fruit and coconut seedlings	3.25
Total	88.955

1. *Sugarcane*.—503.04–3.66 ac. 503.045–2.02 ac. and 524 S–2.50 ac. excluding 1.314 ac. unfit for cane and shortage of area due to drains and channels. Sugarcane is the principal money crop under experimentation on the Farm and continued to be grown from 1925-26 under the five-year rotation, *vide* Statement III. The crop suffered from stem borers as usual and want of timely rains. Of course, it had the advantage of continuous supply of channel water from Vani Vilas Sagara. The average yield of cane per acre worked up to 18.6 tons as against 17.1 tons in 1933-34.

Following are the trials conducted with this.

(a) *Manurial.—Artificial Fertilizer*.—(3.03 ac. 262-502) Experiments to determine firstly the general manurial requirement of the crop and secondly the effect of double and treble doses of ammonium sulphate, superphosphate mixtures and thirdly the effect of the raw artificial fertilizers were conducted by the Agricultural Chemist and the results will be found in his report.

(b) *Varietal*.—(1.92 ac. in S. No. 503-04 N). As reported last year thin and thick canes were separately grown (*vide* Statement IV a. and b). There were seven thick and nine thin varieties under trial. In the former class H.M. 553 stands first in the old canes and above it is C.O. 349. In the latter class H.M. 602 stands first in the old canes and above it C.O. 281 and 290.

(c) *Seedling and other Canes*.—On the 26 types that were last year, three varieties were picked up for replacing the old varieties of the same type, eight were rejected and eight were picked for trial along with standard varieties. Only seven were retained for further trial here and these were supplemented with seven more from Hubbal and there were altogether 14 types under trial. Their performance is given, (*vide* Statement III).

(d) *Insect Pest and Fungoid Diseases*.—Moth borers were bad as usual and smut also is on the increase.

(e) *Planting of the Year*.—An area of 14.76 acres is planted in January 1935, thin and thick types being grown separately in the varietal trial. The manurial experiments of the Chemical Section have been discontinued.

Statement showing the area under cane in 1935-36.

Variety	S. No. 515 in acres	516 in acres	517-18 in acres	518-19 in acres	Total area for each variety in acres
Comparable bulk without repetitions.					
H.M. 602	0.84	0.195	..	1.57	2.605
H.M. 553	0.86	0.195	4.00	..	5.055
H.M. 320	0.23	0.195	..	..	0.425
Babbur striped	0.84	0.195	..	2.41	3.445
C.O. 313	..	0.195	..	..	0.195
H.M. 611	..	0.195	..	..	0.195
J. 33 A white	..	0.195	..	..	0.195

Statement showing the area under cane in 1935-36—concl'd.

Variety	S. No. 515 in acres	516 in acres	517-18 in acres	518-19 in acres	Total area for each variety in acres
H.M. 610	..	0.195	..	..	0.195
C.O. 290	..	0.195	..	..	0.195
H.M. 603	..	0.195	..	..	0.195
C.O. 281	..	0.195	..	..	0.195
H.M. 606	..	0.195	..	..	0.915
Local Rastali	..	0.195	..	..	0.195
P.O.J. 2878	..	0.195	..	..	0.195
H.M. 544	..	0.195	..	..	0.195
C.O. 349	..	0.195	..	..	0.195
E.K. 28	..	0.03	..	..	0.03
H.M. 500	..	0.04	..	..	0.04
Kassare 0-0-19	..	0.015	..	..	0.015
P.O.J. 2883	..	0.015	..	..	0.015
H.M. 609	..	0.02	..	..	0.02
C.O. 205	..	0.023	..	..	0.023
D. 1135	..	0.052	..	..	0.052
H.M. 89	..	0.02	..	..	0.02
D.K. 2	..	0.014	..	..	0.014
H.M. 608	..	0.02	..	..	0.02
H.M. 332	0.04	..	..	..	0.04
C.O. 301	0.006	..	..	..	0.006
C.O. 204	0.02	..	..	..	0.02
J. 33 A striped	..	..	..	0.04	0.04
Total ..	2.836	3.392	4.00	4.02	14.248

(f) *Jaggory Boiling*.—All the cane crop available for milling, viz., 179 tons, 9 cwts 2 qrs. 11 lbs. was crushed with the power mill (noted under machinery) No. 192 Chattanooga mill and boiled down to jaggory in the triple pan furnace, vide Statement V. The jaggory amounted to 1,195 maunds 27 lbs. as against 10.47 in 1933-34 as the majority of the cane crop consisted of different reed canes. The cost of manufacturing jaggory worked up to 5 annas 9 pies per maund as against 5 annas 3 pies in 1933-34. No fuel was purchased; trash, begass, cotton stubbles and dried cocoanut leaves of the garden were made use of as fuel.

(g) *Sugar-making*.—For want of repairs to the centrifugal as reported in the previous year's report, no sugar was made.

(h) *Distribution of setts are as follows.*

Variety	No. of setts (single)	Party
H.M. 602	12,500	Mr. M. N. Subramanyam, Adivala Farm.
H.M. 553	12,000	
H.M. 602	65,000	
H.M. 553	26,000	Mr. H. Y. Veeranna, Hiriur.
H.M. 602	1,000	
H.M. 553	22,000	
H.M. 606	1,000	Mr. Jathre Naik, Babbur Farm.
Babbur striped	2,000	
H.M. 553	1,000	
Babbur striped	1,000	Mr. Kevelappa, Harehabbe.
H.M. 553	10,500	
H.M. 320	5,000	
H.M. 553	6,667	Mr. Muge Gowda, Alur.
H.M. 602	20,000	
H.M. 553	26,000	
H.M. 553	2,333	Agricultural Inspector, Chitaldrug.
H.M. 320	1,000	
H.M. 553	22,510	
H.M. 320	2,490	Agricultural Inspector, Challa-kere.
H.M. 602	20,000	
H.M. 553	26,000	
Total ..	2,41,000	Setts (singles).

2. *Tobacco*.—(1 acre in S. No. 503-04 S). Some five collections mentioned last year which had been collected pure by bagging the inflorescences, were tried on a chess board method. Their yields are noted, *vide* Statement VI. Crop suffered from too much rains in October and November.

3. *Cotton (Irrigated) Breeding*.—9·37 acres in S. No. 509, 524 N and 526 were devoted to this crop raised by the Botanical Section whose report furnishes the results.

4. *Sunnhemp*.—14·575 acres in S. No. 515, 516, 517-18 and
2·75 „ S. No. 514 518-19.

On the first block the crop sown in was ploughed as green manure for sugarcane. Details of yields are as follows :—

S. No.					Area in acres				Tonnage of plot				Tonnage per acre			
									T. Cwt. Q. Lbs.				T. Cwt. Q. Lbs.			
515	..	..	..	..	3·00				28	10	0	0	9	10	0	0
516	..	..	..	..	3·50				29	14	2	1	8	9	3	12
517-18	..	..	..	..	4·00				32	1	3	22	8	1	0	26
518-19	..	..	..	..	4·075				28	2	0	14	6	17	3	3
Total					14·575				118	11	2	9	8	2	2	24

The crop on the second block is sown as a second crop on the plot in the year succeeding monsoon paddy. It was meant for being ploughed in as green manure for the paddy crop which will be grown here in monsoon again. The crop is badly attacked with caterpillars.

5. *Paddy*.—(a) *Monsoon (on 15 acres in S. No. 511-12, 513, 514 and 523)*.—For want of rains, the cultivation of paddy on 11·75 acres was got through tenants as usual on $\frac{1}{3}$ grain and $\frac{1}{2}$ straw share system. Six hundred and thirty-nine seers of grain and 1 ton, 5 cwt. 2 qrs. 13 lbs. of straw were received as Farm share, varieties being G.E.B. 24 and Halubbalu.

						Grain. in seers.	Straw in lbs.
G.E.B. 24	..	..	..	..	..	384	2,283
Halubbalu	..	..	..	..	..	225	586

Cost of cultivation and yield during this season are detailed below :—

S. No.	Area	Varieties	Cost of cultivation of block	Calculated cost of cultivation per acre	Yield of plot		Yield per acre	
					Grain	Straw	Grain	Straw
	Acre		Rs. a. p.	Rs. a. p.	Srs.	Lbs.	Srs.	Lbs.
511-12, 513 and 514	11.75	G.E.B. 24 and Hala- balu.	270 9 4	23 0 2	3,233	5,738	275	488½

7. *Yield per Acre*. Grain 275 srs., Straw 488½ lbs.

Of the area cultivated by the Farm, *i.e.*, 3·25 acres in S. No. 523 the following trials have been done excluding 0·225 acre used up by the main irrigation and hence not cropped.

(i) *Duty of Water Experiments*.—This was conducted on 0·60 acre of land used both for local and G.E.B. 24 varieties of paddy—each broadcasted and transplanted and getting the water pumped by an engine for the purpose to facilitate the measurement of water through a meter. Results of the experiments will be discussed in the report of the Agricultural Engineer.

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(ii) *Varietal*.—(On 625 acre). Three types received from Irwin Canal Farm, Mandya and Paddy Breeding Station, Nagenahalli, were tested in the Latin Square method along with local Halubbalu old and new seeds, combining the testing of old versus new seed also in the experiment. The results are furnished, *vide* Statement VII. The difference in yield between new and old Halubbalu in the Season is in favour of new seed well dried before storing.

The order of maturity observed is as follows inclusive of nursery period of one month.—

- I. Halubbalu (local) comes to full maturity in about 130 days.
- II. Nagpur fine (S. 246) do in about 140 days
- III. G.E.B. 24 do in about 145 days
- IV. Kembuti (S. 67) do in 152 days

N.B.—If broadcasted, all the varieties come to harvest a week earlier.

(iii) *Comparable Bulks*.—(1.80 acres were devoted for this trial without any repetition and the yields are as follows:—

Area	Variety	Yield per plot		Yield per acre	
		Grain	Straw	Grain	Straw
		Srs.	Lbs.	Srs.	Lbs.
60 Acre	G.E.B. 24	708	2,563	1,180	4,272
60 „	Kembuti or S. 67	712	3,232	1,187	5,387
60 „	Nagpur fine or S. 246	523	1,862	872	3,103
1.80 Acres .. ..	.....	1,943	7,657	1,080	4,254

(b) *Sanna*.—(On 3.25 acres in S. No. 523). This is tried as a second crop in the year.

(i) *Duty of water experiments occupied 0.03 acre*.—Results of the experiments will be discussed in the report of the Agricultural Engineer.

(ii) *Varietal*.—Eleven types and selections mentioned in last year's report were tested against local Halubbalu—both old and new occupying 1.75 acre according to the Latin Square method. The results are furnished *vide* statement. The order of maturity inclusive of nursery period is as follows:—

Local Halubbalu, S. 537, S. 531, S. 536, S. 396 came to maturity in about 129 days, S. 547, Chintamani Sanna, Nagenahalli Halubbalu in about 125 days, Bangarkaddi, Kempuraja, S. 532 and Bangarthazi in about 120 days. Comparable bulk of (a) Bangarkaddi, (b) Bangarthazi, (c) Kempuraja, (d) Halubbalu, (e) S. 547 (Chintamani selection) on .50 acre and without repetition, and ordinary bulk on .525 acre. The results of the comparable bulks are as follows:—

Variety	Area	Yield per plot		Yield per acre	
		Grain	Straw	Grain	Straw
	Acre	Srs.	Lbs.	Srs.	Lbs.
Local Halubbalu	0.10	101	278	1,010	2,780
S. 847	0.10	124	364	1,240	3,640
Kempuraja	0.10	92	204	920	2,040
Bangarkaddi	0.10	109	233	1,090	2,330
Bangarthazi	0.10	74	226	740	2,260

Vernalisation.—(0.5 acre).— This process was tried on a small scale on 2 seers of local Halubbalu paddy during this summer (1 seer=1,250 c.c.). It consisted of adding water to the grains little by little, first 500 c.c., *i.e.*, one-fifth by volume and then in two doses later as the water first given is absorbed. Eighty more c.c. of water was

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all that was required for germination in 48 hours, i.e., from 15th January 1935 at 11 A.M. to 17th January 1935 at 12 noon. A count was taken of the sprouted seed which was 10 to 12 per cent. Germination was stopped by cutting the supply of water and drying in dark cool atmosphere all the time stirring the mass of seed only to 13° C. We were able to lower the temperature, from 28° C. to 15° C. and this we maintained for 17 more days, i.e., till 3rd February 1935. The seed was divided into eight parts, as also the .05 acre plot meant for the trial of this paddy, and one-eighth of the seed, i.e., one-fourth seer was sown every alternate day beginning from the 18th to see what number of days of dark and cold treatment would bring on an increased yield or early maturity, the check being the same variety of paddy soaked for germination on the same day in the ordinary way and sown broadcasted in the duty of water experiments. All came to maturity at the same time. So in the last sowing of the vernalised paddy, 15 days in the care and watering of the crop on the land are saved. The yield in the vernalised seed paddy plots was 66½ seers and 158 lbs. of straw as against 54 seers of grain and 151 lbs. of straw in the check and the results are as follows :—

Plot No.	Area of each plot	Variety	Yield per plot		Calculated yield per acre	
			Grain	Straw	Grain	Straw
			Srs.	Lbs.	Srs.	Lbs.
1	0.0063 Acre	Local Halubbala	5½	16½	1,330	3,160
2	0.0063 "	Do	8½	16½		
3	0.0063 "	Do	7½	14		
4	0.0063 "	Do	7½	23		
5	0.0063 "	Do	8½	18		
6	0.0063 "	Do	9½	19		
7	0.0063 "	Do	11½	26		
8	0.0063 "	Do	9½	25		

6. *Groundnut*.—(On 9.00 acres in S. No. 511-12 and 513). H. G. 1 is tried as a second crop in the year on a bulk scale, having been sown on 19th March 1935, 14th and 17th April 1935.

7. *Fodder jola*. (a) *Monsoon*.—(On 12.50 acres in S. No. 503-04, 261 N and 5). This was purely meant for fodder but allowed to seed also as the season for dry land jola was a very bad one at the start to ensure sown seed. Trial of Kabbu-dantina jola also, a collection sent by the Assistant Director, Shimoga, was tried here. The yields are as follows :—

S. No.	Variety	Area	Yield of plot			Per acre		
			Grain	Green fodder	Dry fodder	Grain	Green fodder	Dry fodder
			Srs.	T. C. Q. lbs.	T. C. Q. lbs.	Srs.	T. C. Q. lbs.	T. C. Q. lbs.
503-4 S.	Fodder Jola	1.05	..	1 8 0 14	..	..	6 8 0 14	0 15 2 7
261 S.	do	4.47	228	1 8 3 0	2 2 1 4	57.3	2 16 6 0	..
261 N.	Rain Jola	6.675	436	..	6 6 0 26	65.4	0 18 3 20	..
<i>Comparable.</i>								
Rain Jola 15 guntas in all the three repetitions.			6½	..	0 2 2 13	42	0 17 1 21	..
Kabbu-dantina jola, 15 guntas			9	..	0 2 3 2	60	0 18 1 23	..
Total			..	..	..	50½	4 12 3 7	0 17 2 9

(b) *Summer*.—(On 16.95 acres in S. Nos. 503-4, 261 N and S). This was also meant purely for fodder and grown as a second crop in the year on once cropped area. This crop is still standing.

8. *Horsegram*.—(3 acres in S. No. 261 S.). As a monsoon crop only this was grown for pulse for cattle feed and was followed by fodder jola, sown on 29th October 1934. The yield was poor being 105 seers, i.e., 35 seers per acre.

9. *Linseed*.—(On 50 acres in S. No. 261 S). As a late monsoon crop only, this was tried in here under irrigation and was followed by fodder jola. Growth was very poor though sown on 7th November. Yield was $2\frac{3}{4}$ seers.

10. *Plantains*.—(On 5.00 acres in S. No. 263 and 505-06-71). The first block of 2.50 acres were planted as long ago as four years interplanted with cocoanut also three years ago. The yield is declining and amounted to only 115 fruits. Twenty seedlings, dead here on account of beetle attack for these two years were replanted with fresh seedlings. The second block of 2.50 acres were planted with poovan suckers during the year (on 30th October 1934 to 7th December 1934) and interplanted with cocoanut seedlings (on 2nd and 3rd April 1935).

11. *Cocoanuts*.—(a General). Of 355 palms planted here in 1923-24, all have come to bearing except four. Nuts harvested from the palms from the time they began to bear is as follows :—

Year	No. of bearing palms	No. of nuts	Average annual yield per palm
1930-31	295	13,231	45
1931-32	325	14,515	44.66
1932-33	325	13,194	42
1933-34	356	23,369	66.65
1934-35	356	19,177	54.63

(b) *Trial of Artificial Fertilisers*.—Results of manuring of these palms with artificial fertilisers conducted by the Agricultural Chemist will be dealt with in his report.

(c) *New Sowing and Plantings*.—During the year 432 nuts have been planted from 18 palms selected in consideration of yield, shape and size of nuts and sprouting is in progress.

Of the nuts planted during previous years, 141 seedlings of the following 16 palms were picked up for future propagation and planted in S. No. 505-06-07N mentioned under plantains.

Rank in 1934-35	Palm No.	Nuts sown in nursery for high yield and size	Nuts sown in nursery for shape and size	Nuts sown in nursery for high yield and size	Remarks
IV	117	7	....	7	Big, oval.
VI	84	7	....	7	Medium, oval.
VII (a)	287	7	....	7	Big, round.
VII (b)	123	7	....	....	Medium round.
VIII	83	10	....	....	Big, round.
III	116	....	....	7	Big, oblong.
II (b)	98	....	....	8	Medium, oblong.
II (a)	349	....	....	8	Small, oval.
V	96	....	....	7	Medium, oblong.
I	128	....	....	8	Small, oblong.
	36	....	7	....	Medium, oval.
	67	....	7	....	Big, oblong.
	147	....	7	....	} Big, round.
	36	....	7	....	
	97	....	7	....	
	207	....	9	....	
Total		38	44	59	= 141.

(d) *Black Beetle*.—The attack of this is getting less and less in the old palms and continues to be severe in the young palms.

(e) *Red Weevil*.—Palm No. 303 was the only palm attacked with this insect and died on that account. There were not less than 80 of them in all stages of development.

Old Garden Nursery and Orchard.—(1.25 acre in S. No. 264). The old garden treated as such before acquisition is maintained, as also the fruit trees planted here

in 1927. Lemons, oranges, sappodilla, sour soup and guavas are bearing for the last three years and the pears flowered only during this year. The vacant space is utilised as nursery for raising seedlings of tobacco and cocoanut of selected palms of the Farm.

1. *Areca.* (a) *Investigation on Anabe Roga.*—This is being done by the Mycological Section.

(b) *General.*—The yield from 130 bearing palms amounted to 5 maunds and 46 seers as against 7 maunds and 7 seers in 1933-34. Nursery of fruit and cocoanut seedlings (3.25 acres in S. No. 508). As per Government scheme, this nursery was started in August 1934 for raising seedlings of fruit trees, areca and cocoanuts mainly for distribution among raiyats of the channel area under Vanivilasa Sagara. The following varieties have been secured and grown here:—

STATEMENT A.

Sl. No.	Varieties	Date of sowing	Date of germination	No. of seeds put in the nursery	Seedlings good by the end of June 1935	Percentage of failures
1	Chikkanahalli guavas ..	19-8-1934	11-9-1934	9,750	3,505	86
2	Mysore guavas (white) ..	19-8-1934	11-9-1934	15,000		
3	Do (red) ..	19-8-1934	11-9-1934	15,000		
4	Bochapur guavas ..	20-8-1934	11-9-1934	975	128	87
5	Bennerghatta pomagranates ..	20-8-1934	1-9-1934	6,600	564	91.5
6	Chitaldrug do ..	23-8-1934	5-9-1934	6,875	770	88.5
7	Chintamanji do ..	23-8-1934	6-9-1934	6,875	765	88.9
8	Madhugiri do ..	17-10-1934	3-11-1934	9,600	272	97
9	Sarakki do ..	4-9-1934	18-9-1934	6,000	592	90
10	Tarikere lemons ..	25-26-8-1934	11-9-1934	1,600	7	94
11	Continental lemons ..	2-9-11-1934	20-29-11-1934	7,150	14	99.8
12	Farm herale ..	26-8-1934	13-9-1934	5,700	6	99.9
		4-12-1934	20-12-1934			
13	Chitaldrug herale ..	25-10-1934	12-11-1934	1,200	55	85.4
14	Farm sown oranges ..	26-8-1934	13-9-1934	3,840	17	99.5
15	Devanahalli pomeles ..	21-12-1934	31-12-1934	400	4	99.7
16	Royahore of Challakere ..	16-12-1934	6-1-1935	240	3	98.7
17	Wood apple of Davangere ..	8-2-1935	23-2-1935	1,100	108	90
18	Coorg oranges ..	16-12-1934	25-12-1934			
		3-1-1935	12-1-1935	400	60	85
		4-2-1935	13-2-1935			
19	Rain madala ..	30-12-1934	12-1-1935	80	5	93.8
20	Rain pomagranates No. 1 ..	19-22-11-1934	3-6-12-1934	9,375	1,213	94
21	Do No. 2 ..	4-11-1934	19-11-1934			
		12-11-1934	27-11-1934	11,250		
22	Sindhuvadi Jain seeds ..	28-6-1935	16-7-1935	44		
23	Chamarajnagar seed cocoanuts ..	30-8-1934	1-12-1934	200	170	15
24	Hosdurga do ..	31-10-1934	5-1-1935	375	316	15.7
25	Sirangapatam do ..	25-12-1934	25-1-1935	90	14	Some of the nuts are still sprouting and hence percentage of failures not calculated.
26	Turavakere do ..	25-12-1934	26-3-1935	228	76	
27	Tiptur do ..	11-1-1935	12-4-1935	289		Do
		11-3-1935	13-6-1935			
28	Huliar do ..	21-1-1935	23-4-1935	248		Do
29	Chiknaikanhalli do ..	19-4-1935	21-7-1935	88		Do
30	Holalkere arecanuts ..	30-11-1934	30-5-1935	10,200		
		13-12-1934	13-6-1935			
31	Hiriyur arecanut ..	13-12-1934	15-6-1935	2,650		
32	Kunigal do ..	16-12-1934	18-6-1935	7,000		
33	Jagalur do ..	9-12-1934	10-6-1935	5,250		
34	Salur do ..	5-12-1934	6-6-1935	5,170		
35	Sweet lemons ..	25-26-8-1934	11-8-1934	4,550		

Rupces 199-6-11 have been spent on layout and cultivation.

(c) *Bee-keeping.*—The number of catches made during the year are 15 (*vide* statement). Three deserted and one was given to Mr. Gurusiddappa, Babbur, Hiriyur Taluk, and eight are surviving in the Farm Apiary. Of the catches relating to previous years, one of 1933-34 is surviving and one colony of 1932-33 was divided into two of which only one division is surviving.

No honey was extracted from any colony, there being no surplus probable. The weather was too adverse for the flowering which was sparse. Attack of harnets and wax moths was very bad as usual and the forage was chopped of its foliage for green manure purposes.

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Details of catches made during 1934-35.

Date	No. of colony	No. of hive used	Remarks
9th September 1934	1st colony	4 of new stand	Deserted on 6th May 1935.
12th February 1935	2nd "	Do	Transferred from decoy hive.
16th February 1935	3rd "	9 do	Deserted on 28th February 1935.
20th February 1935	4th "	Sowcar Gundappa's hive	.....
24th February 1935	5th "	13	Deserted on 8th March 1935.
1st March 1935	6th "	9 of new stand.	.....
6th March 1935	7th "	G	.....
10th March 1935	8th "	13	.....
14th March 1935	8th colony of 32-33 of No. 8. of new stand hive divided into two.	E. F	Deserted on 20th March 1935.
27th March 1935	9th colony	D.	.....
17th and 23rd March 1935	10th "	A.	.....
29th April 1935	11th "	C.	Deserted on 1st June 1935.
6th May 1935	12th "	B.	Deserted on 14th May 1935.
12th May 1935	13th "	F.	.....
19th May 1935	14th "	B.	Deserted on 25th May 1935.
23rd May 1935	15th "	2 (old).	.....

(d) *Other Activities.* (i) *Co-operative Societies.*—The Unlimited Society organised three years ago was of much benefit to the labourers on the Farm. Rs. 1,343-5-6 have been collected as share capital and there are 66 members on its roll.

(ii) *School.*—The Primary School continues to work with an average strength of 26 boys and girls.

(iii) *Library.*—There were no additions to the library during the year.

(iv) *Correspondence.*—Letters sent out amounted to 1,760 and letters received 1,720.

T. KRISHNASWAMY,
Manager.

Hiriyur Farm.

STATEMENT I.

Statement showing the rainfall on the Government Experimental Farm, Babbur, during the year 1934-35.

Sl. No.	Month	1933-34		1934-35		Total for 18 years	Average for the past 18 years
		No. of days	Rainfall	No. of days	Rainfall		
1	July	10	2.53	8	2.05	20.76	1.15
2	August	11	4.01	6	0.61	31.11	1.73
3	September	10	6.85	5	0.26	74.64	4.15
4	October	14	10.91	9	6.87	84.83	4.71
5	November	2	0.70	2	0.47	38.20	2.12
6	December	2	1.60	..	..	6.22	0.35
7	January	..	..	1	0.40	4.58	0.25
8	February	..	..	..	..	2.27	0.12
9	March	..	..	..	..	1.32	0.73
10	April	2	0.21	4	1.23	17.01	0.94
11	May	4	1.71	6	2.12	52.01	2.89
12	June	4	4.34	6	1.56	23.95	1.33
Total ..		59	32.86	47	15.57	356.90	20.47

STATEMENT II.

Statement showing the results of the Hebbal and country drills trial conducted during the year 1934-35 on the Government Experimental Farm, Babbur.

I. Jola (in S. No. 165 c. ii).
Sown on 24th October 1934.

Harvested on 8--12th
March 1935.

Name of drill	Area	Repetition	No. of earheads	Yield of plot			Yield per acre		Remarks
				Grain	Chaff	Stalks	Grain	Stalks and chaff	
(a) New seed drill from Hebbal ..	Acre			Srs.	Lbs.	Lbs.	Srs.	Lbs.	
	.15	I	5678	23½	23	262	..	..	
	.15	II	8190	29	15	300			
	.30	..	..	52½	38	562	175	2,000	
(b) Country drill ..	.15	I	5976	34	29	320			
	.15	II	4834	28	20	220			
	.30	..	..	62	49	540	207	1,963	

2. Cotton (in S. No. 166 a.)
Sown on 24th October 1934.

Picked between 20th April
1935 to 23rd May 1935.

Name of drill	Area	Repetition	First picking	Second picking	Total	Yield per acre	Remarks
(a) New seed drill from Hebbal ..	Acre		Lbs. oz.	Lbs. oz.	Lbs. oz.	Lbs. oz.	
	.15	I	13 6	5 14	19 4	..	The new drill used to skid due to moist black cotton soil sticking to the wheels, consequently gaps in the row and too shallow a sowing.
	.15	II	2 0½	2 6½	4 7½	..	
	.30	..	15 6½	8 4½	23 11½	79 0	
(b) Country drill ..	.15	I	17 8	10 0	27 8	..	
	.15	II	2 7½	2 8½	5 0	..	
	.30	..	19 15½	12 8½	32 8	108 5	
Total ..	.30	..	19 15½	12 8½	32 8	108 5	

STATEMENT III.

Statement showing the details of yields of sugarcane in the various plots on the Government Experimental Farm, Hiriya, during the year 1934-35.

S. No.	Area in acres	Particulars	Actual yield				Calculated yield per acre			
			T.	C.	Q.	lb.	T.	C.	Q.	lb.
262-302	3.03	Variety								
		Chemical experiments, H. M. 602	54	18	3	9	18	2	2	11
	0.50	Comparable bulk in 3 repetitions--								
		(1) H.M. 602	15	11	0	24	31	2	1	20
	0.50	(2) H.M. 553	16	16	1	24	33	12	3	20
	0.50	(3) Babbur striped	11	19	3	8	29	19	2	16
	0.47	Marginal bulk H.M. 602	6	9	2	12	13	15	3	1
	5.00	Total	105	15	3	21	21.4 tons.			
503-04 N.		Varietal in three repetitions.								
		(a) <i>Thick canes.</i>								
	0.12	(1) Rastali	1	7	1	4	11	7	2	24
	0.12	(2) P.O.J. 2878	1	11	2	20	13	4	0	0
	0.12	(3) H.M. 544	1	10	2	16	12	15	1	19
	0.12	(4) H.M. 320	1	17	0	20	15	9	0	17
	0.12	(5) Babbur striped	1	14	2	12	14	8	1	16
	0.12	(6) H.M. 553	2	16	1	4	19	5	2	4
	0.12	(7) C.O. 349	2	7	2	12	19	16	2	25
		(b) <i>Thin canes.</i>								
	0.12	(1) H.M. 487-0-0-17 (611)	2	4	3	8	18	13	2	1
	0.12	(2) R.M. 27-6 (610)	2	2	0	8	17	10	2	11
	0.12	(3) J. 33 (a) White	1	19	3	12	16	12	0	16
	0.12	(4) C.O. 313	1	16	3	0	15	6	1	0
	0.12	(5) H.M. 602	2	12	1	0	21	15	1	19
	0.12	(6) C.O. 281	2	18	2	8	24	8	0	11
	0.12	(7) H.M. 603	2	10	0	12	20	17	2	7
	0.12	(8) C.O. 290	3	10	1	4	29	5	2	24
	0.12	(9) H.M. 606	1	19	1	4	16	7	1	15
	1.92	Total								
503-04 N.		Bulk.								
	0.46	(1) H.M. 553	13	1	0	5	24	0	1	27
	0.40	(2) H.M. 602	7	13	2	8	19	3	3	20
	0.12	(3) Babbur striped	1	13	3	4	14	1	1	5
	0.36	(4) J. 33 a white	5	3	1	27	14	7	2	0
	0.01	(5) H.M. 608	0	1	2	4	7	13	2	8
	0.009	(6) D. 1135	0	2	0	0	10	0	0	0
	0.01	(7) E.K. 2	0	0	3	24	4	14	1	20
	0.01	(8) H.M. 89	0	1	0	20	5	17	3	12
	0.01	(9) H.M. 607	0	1	2	24	8	11	1	20
	0.009	(10) H.M. 609	0	0	3	24	4	14	1	20
	0.008	(11) P.O.J. 2883	0	1	1	4	8	11	1	20
	0.05	(12) C.O. 281	0	13	0	4	13	14	2	24
	0.03	(13) H.M. 487-0-0-17 (611)	0	13	0	4	21	14	3	8
	0.04	(14) C.O. 290	1	10	1	16	37	19	3	8
	0.08	(15) R.M. 27-6	1	15	2	20	22	5	3	26
	0.12	(16) C.O. 349	1	12	2	12	13	11	2	24
	0.02	(17) H.M. 320	0	8	2	0	21	5	0	0
	3.666	Total	69	4	3	8	19.4 tons.			
503-04 S.		Comparable bulks without repetitions.								
	0.30	(1) H.M. 553	6	0	2	12	20	2	0	16
	0.30	(2) H.M. 606	4	7	2	4	14	11	3	4
	0.30	(3) H.M. 602	4	3	2	4	13	18	1	6
	0.30	(4) H.M. 320	3	6	2	14	11	2	0	6
	1.20	Total								
		Bulk.								
	0.086	(1) Babbur striped	0	2	2	0	1	8	2	8
	0.10	(2) H.M. 602	1	16	1	4	18	2	3	12
	0.075	(3) H.M. 500	0	1	3	24	1	6	0	20
	0.065	(4) H.M. 332	0	4	0	0	3	1	2	4
	0.0135	(5) E.K. 28	0	3	1	0	13	0	0	0
	0.10	(6) Kassari 0-0-19	1	19	1	8	19	13	0	24
	0.10	(7) C.O. 301	2	3	0	24	21	12	0	16
	0.10	(8) C.O. 205	2	0	1	24	20	4	2	16
	0.10	(9) C.O. 204	2	0	0	20	20	1	3	4
	0.05	(10) C.O. 349	0	6	1	16	6	7	3	12
	0.03	(11) Rastali	Failed.							
	0.8195	Total	28	15	3	14	14.5 tons.			
524 S.		Rotational experiments.								
	2.125	Bulk, H.M. 553	34	7	1	20	16	2	2	16
	0.375		6	0	0	20	15	15	3	22
	2.5 ac.	Total	40	7	2	12	16.4 tons.			
Total	13.1855		244	4	0	27	18	10	2	9
Farm average per acre							18	10	2	9

STATEMENT IV (a).

Statement showing the details of results of sugarcane varietal trial conducted in S. No. 503-04 N on the Government Experimental Farm, Babbur, Hriyur, during the year 1934-35.

Sl. No.	Variety	Area in three repetitions	1st Repetition			2nd Repetition			3rd Repetition			Total yield			Calculated yield per acre		
			T.	C.	Q.	T.	C.	Q.	T.	C.	Q.	T.	C.	Q.	T.	C.	Q.
<i>Thick canes.</i>																	
1	Rastali ..	0.12	0	10	0	0	9	0	0	8	0	1	7	1	11	7	2
2	P.O.J. 2878 ..	0.10	0	13	1	0	10	1	8	0	0	1	11	2	13	4	0
3	H.M. 544 ..	0.12	0	8	0	0	11	2	4	0	10	1	10	2	12	15	1
4	H.M. 320 ..	0.12	0	13	1	0	7	2	16	0	16	0	17	0	15	9	0
5	Babbur striped ..	0.12	0	8	0	0	11	3	0	0	14	3	14	2	14	8	1
6	H.M. 553 ..	0.12	0	15	3	0	11	0	20	0	19	0	2	6	19	5	2
7	C.O. 349 ..	0.12	0	16	0	0	20	2	8	0	10	3	2	7	19	16	2
<i>Thin canes.</i>																	
1	H.M. 487-0-0-17 or (611) ..	0.12	0	14	2	0	15	2	20	0	14	2	2	4	18	13	2
2	R.M. 27-6 (610) ..	0.12	0	12	2	0	17	1	20	0	11	3	2	2	17	10	2
3	J. 33 or white ..	0.12	0	11	1	0	14	0	16	0	14	1	1	19	16	12	0
4	C.O. 313 ..	0.12	0	15	0	0	9	3	20	0	11	2	1	16	15	6	1
5	H.M. 602 ..	0.12	0	18	3	0	14	1	12	0	19	0	2	12	21	15	1
6	C.O. 281 ..	0.12	0	21	3	0	16	3	12	0	19	3	2	18	24	8	0
7	H.M. 603 ..	0.12	0	17	2	0	18	1	8	0	14	0	2	10	20	17	7
8	290 ..	0.12	0	25	1	0	7	2	8	0	27	1	3	10	29	5	2
9	H.M. 406 ..	0.12	0	14	0	0	11	2	24	0	13	2	1	19	16	7	1

STATEMENT IV (b).

Statement showing the results of trial of varieties of sugar-cane from 1918-19 to 1934-35 on the Government Experimental Farm, Babbur, Hiriya Taluk.

Sl. No.	Variety	1918-19	1919-20	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33	1933-34	1934-35
1	Red Mauritius	23.50	21.6	33.4	19.0	30.0	38.0	30.3	22.75	39.0	18.2	28.95	25.01	17.21	19.4	16.6
2	J. 33a	20.65	22.0	35.7	..	..	..	..	..	..	..	..	..	..	..	..
3	Java	17.00	..	..	..	18.0	33.0	25.2	17.2	17.75	17.5	21.25	17.07	14.01	14.27	11.38
4	Rastali	10.16	Not tried	..	..	23.4	30.5	22.2	19.5	35.00	21.9	27.0	27.02	7.51	20.25	12.77
5	H.M. 544	..	..	34.7	17.8	25.0	33.0	28.2	21.1	44.5	18.1	25.8	28.03	14.85	19.46	21.77
6	H.M. 602	..	..	..	16.0	..	..	..	..	..	..	..	..	..	..	..
7	H.M. 553	..	..	..	15.7	32.3	31.0	32.9	31.4	34.35	22.5	35.85	27.08	13.55	17.66	19.28
8	H.M. 376	..	..	..	..	19.6	32.6	..	..	eliminated	..	..	..	..	..	..
9	Babbur striped	..	..	..	..	..	38.5	27.9	25.1	34.66	24.0	29.15	31.10	8.31	17.23	14.42
10	H.M. 320	..	..	..	..	..	..	..	..	..	..	22.15	22.03	10.50	19.53	15.46
11	J. 33 A 0-0-0 or H.M. 603	..	..	..	..	..	..	..	..	..	..	..	..	..	23.34	20.88
12	J. 33 A 0-0-4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10.08
13	P.O.J. 2878	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13.20
14	C.O. 349	..	..	..	..	..	..	..	..	..	..	..	..	..	..	19.84
15	H.M. 611	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18.68
16	H.M. 610	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17.50
17	C.O. 313	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15.31
18	C.O. 281	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24.40
19	C.O. 290	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29.29
20	H.M. 606	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16.37

Hiriya Farm.

STATEMENT V.

Statement showing the sugar-cane crop on the Government Experimental Farm, Babbur, Hiriya Taluk, for the years 1931-32, 1932-33, 1933-34 and 1934-35.

Particulars	1930-31	1931-32	1932-33	1933-34	1934-35	Total for past five years	Average of five years
Area grown (in acres)	16.89	13.84	15.33	15.12	13.186	..	..
Weight of cane (in tons)	448.10	311.11	255.9	259.1	244.2	..	..
Average per acre (in tons)	28.8	28.2	18.2	17.1	18.5	110.8	22.2
Weight 1 cane used for sets (in tons)	113.2	98.9	41.6	37.5	64.75	..	..
Do for crushing (in tons)	3,750	239.02	244.35	221.55	173.5	..	..
Do jaggery reduced in inds. of 28 lbs.	2,915.9	2,455.3	1,807.7	1,856.3	1,196	..	..
Percentage of jaggery to cane	9.7	10.4	9.3	10.47	8.32	48.19	9.63
Cost of making jaggery per maund	Re. 0.5-9	Re. 0.4-11	Re. 0.5-3	Re. 0.5-3	Re. 0.5-9	Re. 1-10-9	Re. 0.5-4

Statement showing the results of monsoon paddy varieties conducted in S. No. 523
on the Government Experimental Farm, Hiriyr, during the year 1934-35.

Transplanted On 30th and 31st August 1934.
Harvested on 11th December 1934 to 3rd January 1935.
System of replication .. Chess Board method arranged according to randomised block
system and repeated five times.
Area of each plot One gunta.
Soil Red loam.
Treatment (Rate of application per acre) 80 lbs. Am_2SO_4 , 160 lbs. super phos-
phate, 160 lbs. of groundnut oil cake.
Basal manuring, if any .. Nil
Date of application of manure 10th September 1934.
Seed sown on 26th July 1934.
Previous crop Sugar-cane.

Summary of results.

		Local old Halubbalu	587 Kumbatta	S. 246 or Nagpur fine	Local new Halubbalu	G.E.B. 24	General mean grain 24.58 srs. straw 79.12 lbs.
Mean yields	Grain in sers	25.5 srs.	25.05 srs.	22 srs.	27.2 srs.	23.25 srs.	
	Straw in lbs.	85.6 lbs.	94 lbs.	54.2 lbs.	93.8 lbs.	68 lbs.	
		Srs.	Srs. GRAIN.	Srs.	Srs.	Srs.	Srs.
(1) Per acre		1,020	1,002	880	1,088	926	983.2
(2) Per cent on general mean		+3.61	+1.9	-11.73	+9.63	-6.2	....
(3) Per cent on control, if any		....	-1.79	-16	-6.25	-10.15	....
		STRAW.					
		lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
(1) Per acre		3,424	3,760	2,168	3,752	2,720	3164.8
(2) Per cent age on general mean		+7.57	+15.83	-46	+15.65	-16.35	....
(3) Per cent on control, if any		....	+9	-58	-8.74	-26	....

Hiriyr Farm.

Statement showing the yields of different varieties of tobacco grown on the Government Experimental Farm, Babbur, Hiriyur Taluk, during the year 1934-35, in S. No. 503-04--S., each of the five varieties repeated five times on latin square method on 0.19 acre each plot.

Date of sowing in nursery. 5th July 1934 and 8th August 1934.

Date of transplanting. 19th September 1934 and 4th and 30th October 1934.
Date of harvest. 19th and 21st February 1935.

Sl. No.	Area devoted to each variety	Name of variety	First Repetition	Second Repetition	Third Repetition	Fourth Repetition	Fifth Repetition	Total yield of green tobacco with sticks	Total yield of dried, cured tobacco	Calculated yield of cured tobacco per acre	Total yield of tobacco sticks	Calculated yield of tobacco sticks per acre
	Acre		Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Mds. Lbs.	Mds. Lbs.	Lbs.	Lbs.
1	0.193	Clopland ears	19	38	34	47	15	153	2 10	12 7	21	109
2	0.193	Bettadapur No. 2	28	32	34	15	15	124	1 15	8 0	22	114
3	0.193	Kattakivi	15	18	18	11	24	86	1 12	7 12	11½	60
4	0.193	Balepette	20	15	24	30	31	120	1 7½	6 16½	20	104
5	0.193	Chowthikodi	12	23	40	32	14	121	1 7	6 14	22	114
6	..	Bulk tobacco	..	..	..	..	..	14	0 6	6 3	1½	43

STATEMENT VIII.

Statement showing the results of summer paddy varieties grown in S. No. 523 of Government Experimental Farm, Hiriur, during the year 1934-35.

System of replication	Latin square or cross board method.	Date of application of basal manure	12th February 1935.
Area of each plot	One gunta.	Seed sown in nursery on	18th January 1935 and 31st January 1935.
Soil	Red sandy loam.	Date of transplanting	25th and 28th February 1935.
Basal manuring, if any	6,000 lbs. of honge twigs and leaves.	Harvested on	27th May 1935 to 11th June 1935.
Treatment	Nil.	Previous crop	Monsoon paddy.
Date of application of artificial fertilisers per acre	Nil.		

Paddy Varieties	Local Halub.	S. 537	S. 531	S. 532	S. 536	Local Halub.	Bangar Kaddi	S. 547	Kempuraja	Dangarthaza	Local Old Halubalu	Local New Halubalu	Chintamani Sanna.	S. 396	Nagenaballi Halubalu	General mean
Mean yield	23.8	25.9	24.4	18.1	23.4	26.7	27.6	32.2	28.3	25.6	31.9	30.8	30.7	32.8	29	23.12
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28.1
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29
1. Per acre	352	1,036	976	724	936	1,068	1,104	1,288	1,132	1,024	1,276	1,232	1,228	912	1,160	924.8
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,124
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,160
2. Percentage on general mean	+1.8	+10.73	+5.5	-21.1	+1.2	-5.2	-1.8	+12.7	+0.7	-9.76	+9.1	+5.9	+5.54	-27.2	..	924.8
3. Percentage on control if any	..	+8.1	+2.46	-31.49	-1.71	..	+3.26	+17.08	+5.65	-4.3	..	-3.6	-3.9	-31.91	-10	1,124
Mean yield	68	90	92	82	110	74	62	98	69	75	92	82	112	79	75	88.4
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	88
1. Per acre	2,720	3,600	3,680	3,280	4,400	2,960	2,480	3,060	2,760	3,000	3,680	3,280	4,480	3,160	3,000	3,536
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,032
Do	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,520
2. Percentage of general mean	-30	+1.8	+3.91	-708	+19.63	+2.43	+22.25	+23.43	-9.15	-1.06	+4.34	-7.31	+21.43	+11.4	+17.53	..
3. Percentage on control if any	..	24.44	+26.1	+17.07	+38.18	..	-19.35	+25.25	-7.24	+1.33	..	-12.19	+17.85	+16.45	+22.66	..

REPORT OF THE EXPERIMENTAL FARM AT MARTHUR, FOR THE YEAR 1934-35.

SEASONAL CONDITIONS.

The total rainfall from 1st July 1934 to end of June 1935 as furnished below was 87.11 inches as against 139.25 of the previous official year. It shows a decrease of 52.14. The highest rainfall in a day during the year was 4.50 inches. The total rainfall for the year having spread over 127 days. The monsoon commenced in the month of June.

The monthly distribution was as follows.—

	Inches	Cents	No. of rainy days
July 1934	28	44	31
August 1934	27	30	31
September 1934	4	54	23
October 1934	11	31	10
November 1934 .. .. .	....	99	3
December 1934 .. .. .	....	....	....
January 1935 .. .. .	....	....	....
February 1935 .. .. .	....	....	....
March 1935 .. .. .	....	10	3
April 1935 .. .. .	....	05	1
May 1935 .. .. .	....	34	2
June 1935	14	04	23
Total ..	87	11	127

I. GARDEN.

(a) *Areca*.—The whole garden was sprayed with casein bordeaux and oil bordeaux mixtures, using groundnut as an adhesive. But in the month of August a few cases of Koleroga were noticed in the rows of oil adhesive and the same were resprayed. The yield of areca during the year was 2,695 lbs. including 260 lbs. of round, 105 lbs. of boiled gotu and 1,160 lbs. of unshelled green gotu.

No manual experiments were conducted during the year.

During the year under report the whole garden was mulched with green leaves.

(b) *Pepper*.—The yield of pepper during the year was 255 lbs. against 136 last year. The average dry yield per pepper vine is as follows:—

Local	2.9 lbs.
Malabar	3.6 „

The highest yield of green pepper of local is 10.12 lbs. and that of Malabar 15.18 lbs.

During the year 2,025 Malabar pepper cuttings and 618 basket layerings of Balamkota and Kalluvalli were distributed outside the farm. Due to higher yield than that of the local there was very great demand for these improved varieties and the farm could not meet the demand.

(c) *Cardamom*.—The yield of cardamom during the current year was 12 lbs. as against 37½ lbs. of last year. The cardamoms that were planted in the new garden have not yet begun to bear.

II. NEW ARECA GARDEN.

The new areca garden was mulched with green leaves. During the year two varieties of arecanuts, viz., Bharathipura and Ambalike were received from Tirthahalli to raise seedlings. The seeds have germinated and planting will be taken up next year.

Marthur Farm.

III. WET AREA.

Paddy.—The total area under paddy crop was 15 acres and 29 guntas, of which G.E.B. 24 paddy was under 10 acres and 33 guntas and sown as bulk. In sown area the yield is less per acre. During the year H.O. 529, W. 3629, H.B. 829, Si. 1029, D. 329, T. 129, S.T. 1029 and Si. 1329 having given best yield up to 2,980 lbs. per acre, have been sown in bulk plots.

Plantains.—Plantain varieties in the new area garden are coming up very well and they have begun to bear here and there. No new varieties have been introduced during the year under report.

Manurial Tests.—The application of single and double doses of paddy mixture was carried out this year also at the time of transplanting. The yield from the different plots are as follows :—

Variety G.E.B. 24. Harvested on .. 11th August 1934.
Transplanted on .. 11th August 1934. Area of the plot .. Half an acre.

(A to F. Range).

Plot No.	Treatment	Yield per acre	Straw
1. Single dose	80 lbs. Am_2S_4 ..	2,704 seers	1,980 lbs.
	160 lbs. Supers ..		
2. Double dose	160 lbs. Am_2S_4 ..	2,680 ..	1,906 ..
	320 lbs. Supers ..		

Varietal Test.—Area 1 acre and 20 guntas. This is the third crop with individual selections from Botanical Section. Of the varieties, T. 129, H.B. 829 and Walva 3629 have been distributed to the raiyats for seed purposes round about Marthur village.

Chemical Section.—The nature of experiments carried out in G. Range are as follows :—

Area of plot.

1. Am_2S_4 and Supers	5 lbs. plus 11.25 lbs. ..	2 Guntas.
2. Niciphos, 17-45	4.5	"
3. Groundnut oilcake	6.25 ..	2 ..
Ammonium sulphate	2.5 ..	
Superphosphate	11.25 ..	
4. Groundnut oilcake	12.5 ..	2 Guntas.
Superphosphate	11.25 ..	
5. Calcium Cyanamide	5.25 ..	2 ..
Superphosphate	11.25 ..	

The results of experiments with the area are as per statement No. 2 attached.

Sugar-cane.—The area under newly planted sugar-cane was 1 acre and 26 guntas in G. Range. The varieties grown under bulk and which thrive very well in these parts are H.M. 553 and H.M. 544. In addition to the above varieties from Botanical Section were tried and the yields of the same are noted below.

About 100 setts of H.M. 87 were got from Kumta and they have been planted in, a separate area and the crop appears to be a promising one.

The results of varietal sugar-cane tests are :—

Planted on 2nd February 1934.

Harvested on 1st February 1935.

Variety	Area	Yield of cane per plot	Yield of cane per acre	Brix
1. H.M. 544	1 Acre 5 Guntas	507 lbs.	13,520 lbs.	15
2. H.M. 553	" "	917 "	24,480 "	15
3. H.M. 320	" "	599 "	15,920 "	16
4. Java	" "	511 "	13,600 "	16
5. H.M. 332	" "	784 "	10,860 "	17

<i>Bulk.</i> —	I.	H.M. 553	..	..	..	22,210 lbs. per acre.
	II.	H.M. 544	..	..	..	24,360 „ „

Distribution.—There was a very good demand for sugar-cane setts and it was not possible to meet the whole demand. The number of setts distributed during the year was 2,010. This year a portion of juice was converted into brown sugar, the quantity of sugar obtained being 82 mds. and 14 lbs. The rest was made into jaggory, the outturn being 58 mds.

Baje. The same plot of one and half guntas planted during last year remains this year also and the crop was not harvested.

Gingelly.—Gingelly was tried in about half gunta in the wet lands and the crop failed on account of heavy rains at the time of maturing.

IV. DRY AREA.

Ragi.—The area under this crop including the varieties was about 28 guntas and the statement of different varieties with their yield is enclosed (*vide* Statement Nos. 6 and 7).

Chillies.—M.F.I. was the only variety grown on an area of one acre and 28 guntas as bulk crop and the yield got this year was 472 lbs. of dry chillies and 2,664 lbs. of green chillies.

Ginger.—As a dry land crop ginger was being grown for the last two years and in the first year the crop was a promising one. The area of this crop was increased by four acres. Owing to unfavourable seasonal conditions the crop failed and the yield was only 50 mds. for the whole plot and the same was used for planting during current year. The crop also suffered from fungus disease which was reported to the Mycologist.

Pine Apples.—Four varieties of pine apples, *viz.*, Kew, West Indies, Queen and Mauritius are being tried and the crop suffered for want of rains in dry lands. The suckers planted in Soppinabetta area have come up well. The total under this is about 24 guntas.

Groundnuts.—As an experimental measure four varieties of groundnut, *viz.*, H.G. I., Valencia, Tennessee and Spanish were tried and the yields are noted in statement No. 8 appended.

Coffee.—About four years back Robusta and Arabica coffee plants were planted in Soppinabetta area. For want of sufficient shade they did not thrive well. The crop also suffered from dieback disease.

Mango.—During the year the trees flowered very well and most of the fruits shed when they were tender and also when they began to ripe. The specimens were sent to the Entomologist. Four mango plants “Fernandiz” were got from Goa, of which one died and the remaining three were planted in the mango grove.

Other Plants. There are about four nutmeg plants and one clove plant and they are coming up but the plants are not showing vigorous growth yet.

Silage.—During the year the silage was very good and there was not much wastage. The cattle relished the same well. The total quantity of silage got and fed to the cattle was 6,340 lbs.

Cashewnuts. Seeds were planted behind the quarters on the hill side and they are just coming up. They are about 100 in number.

V. OTHER ACTIVITIES.

Night School.—A night school is being run on the Marthur Farm by the Education Department for the benefit of farm men labourers.

Farm Co-operative Society. It is a mofussil society specially meant for the Farm staff. There are 29 male members and 10 female members. The total share amount of the society is Rs. 1,390-2-4 and the total transaction for the year is Rs. 5,340-6-0. Most of the members are also land owners. During the year, the Society spent Rs. 61-6-0 for Agricultural work, *i.e.*, for purchasing 22 mds of ammonium sulphate and 11 mds. of superphosphate, for the sugar-cane crop round about the farm.

Visitors.—The total number of visitors to the Farm during the year was 268 including the following distinguished persons:—

1. Dewan Bahadur N. N. Iyengar, B.A., L.C.E., Etc., Chief Engineer of Mysore.
2. V. V. Karve, Esq., L.C.E., Superintending Engineer, Shimoga.

Marthur Farm.

Short Courses.—During the year, two short courses were held. One in the month of September on the demonstration of drying of areca in the areca drier and the other in the month of January on jaggery boiling and country sugar-making. The Number of visitors at the time of the demonstrations was 69 for areca drier and 23 for jaggery boiling and sugar-making, the amount incurred for feeding the visitors being Rs. 40-4-0.

Programme for next year.—

1. Construction of a bath room and a kitchen for the guests quarters.
2. Acquisition of fresh lands for pasture and green leaves.
3. Improvement of the well on the farm for drinking purposes.
4. Extension of paddy lands towards Soppinabetta area by about one acre.
5. Digging manure pit near the new cattle stall.
6. Removing lantana and other shrubs near Soppinabetta area.
7. Planting pepper vines in the newly acquired area.
8. Planting new varieties of pine apple suckers.

S. H. BENNUR.
Assistant Director.

STATEMENT No. 1.

Marthur Farm. Paddy bulk varietal experiment for the year 1934-35.

'U' Range.

Area—36 Guntas.

Plot No.	Area in Guntas	Varieties	Date of trans-planting	Date of flowering	Date of harvesting	Yield in lbs. per plot		Yield in lbs. per acre	
						Grain	Straw	Grain	Straw
1 & 19	2	H.B. 829	16-7-34 to 17-7-34	30-10-34	10-12-34	115	148	1,110	2,960
2 & 20	"	W. 3629	Do	18-10-34	26-11-34	74	104	880	2,080
3 & 21	"	S.I. 1029	Do	28-10-34	3-12-34	74	137	880	2,740
4 & 22	"	D. 329	Do	26-10-34	3-12-34	85	164	1,060	3,880
5 & 23	"	T. 129	Do	18-10-34	1-10-34	80½	124	900	2,480
6 & 24	"	A. 229	Do	18-10-34	3-12-34	59	100	510	2,000
7 & 25	"	G. Sivamankota ..	Do	10-10-34	14-11-34	60	123	710	2,460
8 & 26	"	G. Rosaki	Do	20-10-34	3-12-34	57½	168	680	3,360
9 & 27	"	G. Tenas	Do	28-10-34	10-12-34	68	158	740	3,100
10 & 28	"	G. Tigina	Do	29-10-34	22-12-34	51	143	580	2,860
11 & 29	"	S. 12	Do	26-10-34	11-12-34	59	118	670	2,360
12 & 30	"	S. 246	Do	6-10-34	20-11-34	48½	119	610	2,380
13 & 31	"	Si. 1329	Do	19-10-34	3-12-34	81	133	960	2,660
14 & 32	"	So. 829	Do	18-10-34	23-11-34	104	175	1,200	3,500
15 & 33	"	Sepoy	Do	22-9-34	12-11-34	10	51	120	1,020
16 & 34	"	H.O. 529	Do	20-10-34	3-12-34	112	213	1,240	4,260
17 & 35	"	H.A. 1129	Do	25-10-34	3-12-34	98	113	1,160	2,260
18 & 36	"	Walya 429	Do	28-10-34	20-11-34	103	173	1,150	3,460

STATEMENT No. 2.

Marthur Farm. Chemical manurial experiments on G.E.B. 24 Paddy for the year 1934-35.

G. Range.

Area—1-24 Guntas.

Plot Nos.	Area in Guntas	Treatment	Yield per plot in lbs.		Yield per acre in lbs.	
			Grain	Straw	Grain	Straw
1	2		34	60	1,173½	2,220
6			29	40		
11			25	45		
16			29	48		
19			27	50		
22			32	60		
2	2		37	55	1,326	2,512
7			29	50		
12		Ammonium sulphate 5 lbs.	34	67		
17		Supers 11.25 lbs.	34	67		
20			31	63		
23			34	75		
3	2		31	55	1,203½	2,426
8		Niephos 17-45 grade 4.5 lbs.	32	60		
13			34	58		
4	2	Groundnut cake 6.25 lbs.	34	58	1,333½	2,546
9		Ammonium sulphate 2.5 lbs.				
		Supers 11.25 lbs.	34	78		
14			32	55		
5	2	Groundnut cake 18.25 lbs.	32	52	1,400	2,532
10		Supers 11.25 lbs.	31	68		
15			41	70		
1	2		33	54	1,320	2,160
2			31	48	1,240	1,920
3		General check	31	45	1,240	1,800
4			22	42	2,880	1,680
5			30	40	1,200	1,600
6			24	35	960	1,400
7			21	36	640	1,440
8			23	37	920	1,480

Date of transplanting—15th July 1934 to
17th July 1934.

Flowered on 20th October 1934.

Marthur Farm.

Harvested on 5th December
1934 to 7th Dec-
ember 1934.

STATEMENT No. 3.

Marthur Farm. Paddy varietal experiment for the year 1934-35.
Conducted in A—F (Range). Area—20 Guntas.

S. No.	Area in Guntas	Name of varieties	No. of plots each plot 1 Gunta	Date of sowing	Date of harvesting	Yield per plot		Yield per acre	
						Grain in lbs.	Straw in lbs.	Grain in lbs.	Straw in lbs.
1	2	W. 3629	2 & 38	19-4-34	17-11-34	130	311	2,600	6,220
2	"	W. 529	4 & 40	Do	Do	128	238	2,560	4,760
3	"	Walya	27 & 63	Do	16-11-34	126	244	2,520	4,880
4	"	A. 229	3 & 39	Do	Do	104	258	2,080	5,160
5	"	A. 1829	11 & 47	Do	14-11-34	92	278	1,840	5,560
6	"	A. 1429	17 & 53	Do	16-11-34	86	199	1,720	3,980
7	"	A. 1029	23 & 59	Do	Do	102	224	2,040	4,480
8	"	H. O. 629	5 & 41	Do	Do	123	265	2,460	5,300
9	"	Si. 1029	29 & 65	Do	24-11-34	132	257	2,640	5,140
10	"	H. O. 529	32 & 68	Do	16-11-34	149	306	2,980	6,120
11	"	H. B. 829	8 & 44	Do	30-11-34	97	359	1,949	7,189
12	"	H.B. 1529	22 & 58	Do	24-11-34	95	284	1,900	5,680
13	"	H.B. 229	28 & 64	Do	Do	79	255	1,580	5,100
14	"	H.B. 1629	34 & 70	Do	16-11-34	110	204	2,200	5,680
15	"	H.B. 1929	35 & 71	Do	24-11-34	97	269	1,940	5,380
16	"	H.B. 4429	9 & 45	Do	16-11-34	113	223	2,260	4,460
17	"	D. 329	14 & 50	Do	28-11-34	103	256	2,060	5,120
18	"	T. 129	15 & 51	Do	16-11-34	117	215	2,340	4,300
19	"	H.A. 2129	20 & 56	Do	Do	100	208	2,000	4,160
20	"	Si. 1329	26 & 62	Do	23-11-34	130	217	2,600	4,340
21	"	G. Rosak	10 & 46	Do	16-11-34	54	212	1,080	4,240
22	"	G. Tenas	16 & 52	Do	12-11-34	34	160	680	3,200
23	"	G. Sivamankota	21 & 57	Do	Do	30	220	600	4,400
24	"	Tigima	33 & 69	Do	17-11-34	50	256	1,000	5,120
25	1	Walya	6	Do	16-11-34	72	144	2,880	5,760
26	"	H.B.	12	Do	30-11-34	55	126	2,200	5,040
27	"	Siddasale	18	Do	Do	60	160	2,400	6,400
28	"	D. B.	24	Do	Do	65	155	2,600	6,200
29	"	Hasadi	30	Do	Do	53	148	2,120	5,920
30	"	Abusanna	36	Do	16-11-34	46	102	1,840	4,080
31	"	Bhave	42	Do	Do	58	95	2,320	3,800
32	"	G.E.B.	48	Do	22-11-34	57	126	2,318	5,040
33	"	Somasale	54	Do	16-11-34	56	128	2,240	6,020
34	"	Togarina	60	Do	Do	67	118	2,680	4,720
35	"	Mussally	72	Do	30-11-34	73	224	2,920	8,960
36	"	Jaddu	66	Do	Do	71	229	2,840	9,160

STATEMENT No. 4.

Marthur Farm. Paddy bulk varietal experiment in H. Range.
Area—5 Guntas.

Plot Nos.	Area in Guntas	Varieties	Date of trans-planting	Date of flowering	Date of harvesting	Yield per plot in lbs.		Yield per acre in lbs.	
						Grain	Straw	Grain	Straw
1	One	H.E. 829	17-7-34	18-10-34	3-12-34	56	118	2,240	4,720
2	"	W. 3629	22-7-34	20-10-34	20-11-34	69	120	2,760	4,800
3	"	Si. 1029	22-7-34	23-10-34	3-12-34	60	88	2,400	3,520
4	"	D. 329	22-7-34	18-10-34	3-12-34	75	96	3,000	3,840
5	"	T. 129	22-7-34	28-10-34	20-11-34	46½	60	1,860	2,400

STATEMENT No. 5.

Marthur Farm. Single and Double doses of chemical manurial test on G.E.B. 24 paddy for the year 1934-35. (Area—1 Acre.)

Plot No.	Area	Treatment	Yields of plots in lbs.		Yield per acre in lbs.	
			Grain	Straw	Grain	Straw
..	..	I Single dose AM2 So4 80 lbs.	260	505	..	..
..	..	Supers 160 lbs.	256	485	1,032	1,980
..	..	II Double dose Am2 So4 160 lbs.	258	458	..	..
..	..	Supers 320 lbs.	257	495	1,030	1,906

Date of transplanting 14th August 1934.

Date of harvesting 25th December 1934.

Marthur Farm.

STATEMENT No. 6.

Marthur Farm. Ragi varietal experiment for the year 1934-35.
Area—2 Guntas.

Plot No.	Area	Variety	Date of sowing	Date of flowering	Date of harvesting	Yield per plot in lbs.		Yield per acre in lbs.	
						Grain	Straw	Grain	Straw
D. Range Dry area.									
1	31 Sq. Yds.	Bulk	9-7-34	6-11-34	11-12-34	$\frac{1}{2}$	2	78	312
2	"	C5 Nasik	Do	2-11-34	Do	$\frac{1}{2}$	$1\frac{1}{4}$	39	195
3	"	C6	Do	8-10-34	Do	$\frac{1}{2}$	$1\frac{1}{4}$	39	195
4	"	C3 Ratnagiri	Do	Do	Do	$\frac{1}{2}$	$1\frac{1}{4}$	39	195
5	"	C4	Do	10-10-34	Do	1-16	2	9	312
6	"	C1	Do	Do	Do	1-16	2	9	312
7	"	C2	Do	18-10-34	Do	$\frac{1}{2}$	$1\frac{1}{2}$	19 $\frac{1}{2}$	234

Remarks. The crop suffered on account of heavy rains, after sowing.

STATEMENT No. 7.

Marthur Farm. Ragi varietal experiment for the year 1934-35.

Plot No.	Area	Variety	Yield per plot in lbs.		Yield per acre in lbs.		
			Grain	Straw	Grain	Straw	
F. Range.							
1	½ Gonta	Local bulk	4	12	320	960	
2	"	Local check	4	10	320	800	
3	"	M.M. 1	3	8	240	640	
4	"	M.M. 2	4	10	320	800	
5	"	M.M. 3	4½	12	360	960	
6	"	M.M. 4	5½	13	440	1,040	
7	"	Jede Sanga	3	4½	240	360	
8	"	Jenumudde	3	4½	240	360	
9	"	Rudrejade	5½	6	440	480	
10	"	K1	6	8	480	640	
11	"	K2	4	4	320	320	
12	"	H2	4½	6	360	480	
13	"	H22	3½	5	280	400	
14	"	H40	4	5½	320	440	

Date of sowing 9th July 1934.

Date of harvest—11th
December 1934 to 18th
December 1934.

STATEMENT No. 8.

Marthur Farm. Groundnut varietal experiment for the year 1934-35.
Area—24 Guntas.

Plot No.	Area in Guntas	Variety	Date of sowing	Date of flowering	Date of harvesting	Dry yield per plot in lbs.	Dry yield per acre in lbs.
Dry Area.							
E. Range.							
	One	H.G. 1	10-7-1934	20-10-1934	19-11-1934	9	360
	"	Velencia	Do	12-10-1934	Do	$3\frac{1}{2}$	140
	"	Tennessee	Do	15-10-1934	Do	7	280
	"	Spanish	Do	13-10-1934	Do	$6\frac{1}{2}$	260
	"	Bulk	Do		20-11-1934 to 28-11-1934	110	220

Marthur Farm.

STATEMENT No. 9.

Statement showing the Receipts and Expenditure of the Marthur Farm for the year 1934-35.

No.	Months					Receipts	Expenditure
						Amount. Rs. a. p.	Amount. Rs. a. p.
1	July 1934	..	..	..	..	18 11 9	423 12 3
2	August 1934	..	..	..	..	21 8 0	644 6 8
3	September 1934	..	..	..	..	14 14 3	496 13 8
4	October 1934	..	..	..	..	10 4 6	529 15 7
5	November 1934	..	..	..	..	36 14 0	379 9 3
6	December 1934	..	..	..	..	104 9 6	373 14 4
7	January 1935	..	..	..	..	58 8 0	511 6 8
8	February 1935	..	..	..	..	712 9 6	391 3 8
9	March 1935	..	..	..	..	537 8 0	307 7 6
10	April 1935	..	..	..	..	120 4 3	275 2 2
11	May 1935	..	..	..	..	60 14 0	402 3 4
12	June 1935	..	..	..	..	6 8 0	503 6 2
					Total	1,703 1 9	5,239 5 3

S. H. BENNUR,
Assistant Director.

Marthur Farm.

REPORT OF WORK DONE IN THE IRWIN CANAL FARM DURING 1934-35.

Items of Work.—During the period under report, $183\frac{1}{4}$ acres of Sugar-cane, mostly H.M. 320 variety, were planted and $52\frac{1}{2}$ acres of the previous plant cane stubbles were ratooned. The crop on 118 acres was harvested and transported to the Factory for crushing and 41 acres were cut for seed supply. An yield of 5,000 tons of sugar-cane from the ripe ratoon and plant cane awaiting to be harvested is expected. 9,08,490 setts of H.M. 320 sugar-cane were also supplied to the raiyats of the Irwin Canal tract.

Seasonal influence on the maturity of cane as also the keeping qualities of cane appears to be interesting. Planting of H.M. 320 Canes in all the planting months, viz., February to the middle of August was undertaken in order to study these features. Sugar-cane planted between February and April appears to mature in about 12 months. May and June planting seems to take about $13\frac{1}{2}$ to 14 months, while canes planted after the 15th of July seem to mature between the 12th and the 13th months. High winds that occur in ripening period of the May and June plantings may retard the maturity of canes. February Plant Canes which had arrowed profusely in the previous years did not behave likewise this year and only 3 per cent arrowing was noticed, yielding about 33 tons of cane to the acre.

Experimental Work.—

- (1) Sugar-cane varietal tests.
- (2) Manurial tests.
 - (a) Potash.
 - (b) Nitrogenous. (Last years results enclosed).
 - (c) Phosphatic Manures.
 - (d) Duty of water.

Sugar-cane Varietal Tests.—Among 21 varieties of J. 213 Seedling Canes grown last year, H.M. 607, 617, 627, 619 and H.M. 613 were found to be promising and these varieties have been planted on one acre plots to test their suitability for Sugar manufacture. Among the exotic canes, P.O.J. 2878 and E.K. 28 are also included in the test. All these seedling canes were found to be very vigorous and grew very well in spite of the soil being sandy. H.M. 607 and H.M. 619 were found to lodge very badly.

Results of the Varietal Test.—

Name of the variety						Number of millable canes per acre	Yield per acre
							Tons
H.M. 607	..	..	..	..	..	22,200	36
H.M. 617	..	..	..	..	..	45,940	49
H.M. 619	..	..	..	..	..	31,940	35
H.M. 627	..	..	..	..	..	38,940	31
H.M. 613	..	..	..	..	..	32,280	48
P.O.J. 2878	..	..	..	..	..	31,360	20
E.K. 28	..	..	..	..	..	22,080	Used for setts.

All these varieties seem to do very well for late planting, viz., after June.

Potash Experiments.—The results of the experiments were not significant, and the experiment is being repeated. For results of last year's experiment, *vide* statement 2.

Superphosphate Experiment.—The crop has not yet been harvested. Results will be reported after the harvest of the crop.

Irrigation Experiments.—These experiments were set on foot in co-operation with the Irrigation Department. Sugar-cane was irrigated in the Experimental Plots at Irwin Canal Farm.

intervals of 6, 8 and 10 days. The results obtained are not yet conclusive as the soil conditions are changing due to the advent of channel water. Experiments to find out the requirements of water for Garlic, Paddy, Groundnut, Lucerne and other miscellaneous crops were also undertaken during the period under report.

Borer Control on Sugar-cane.—*Argyria* or the short borer assumed an important position as a pest on Sugar-cane in the Irwin Canal Tract. The life history of the insect was thoroughly studied and it was found that earthing up the young cane when 4–6 weeks old and repeating the operation a fortnight after the first earthing acted as an effective check in keeping down the pest. The plant cane crop on 130 acres on this Farm was found to be free from the pest due to this treatment. Several raiyats copied this method and have saved their crops from being damaged.

Green Manuring of Sugar-cane.—Sunhemp was grown for green manuring on an area of 125 acres. This crop not only kept down the weeds but improved the soil texture considerably. The crop was ploughed in at 8–10 weeks after sowing. The top clippings were used for fodder when a shortage of fodder supply was felt on the Farm. An interesting experiment for green manuring ratoon crop of Sugar-cane was tried. Cane sprouts in ratoon field were allowed to grow to a height of 9" to 12" and sunhemp seeds were sown in the space between rows of cane. Both the cane and the green manure crop grew vigorously. The crop was found to be free from cane shoot borers.

Paddy.—Paddy was grown over an area of 23 acres. G.E.B. 24, Nagpur Fine, Kaddisanna and Pattasamanahally Sanna Paddy varieties were grown.

Variety.	Yield in seers per acre.
1. G.E.B. 24	684
2. Nagpur Fine	906
3. Kaddi Sanna	1,560
4. Pattasamanahally Sanna	1,000

Tobacco.—Pusa Hybrid and Bettadapur are, among the varieties grown in the Botanical Section, found to be superior to the other varieties. Seven acres were devoted to this crop and an yield of 140 maunds of cured leaf was obtained. The leaves were cured in shade in the local method. Government having been pleased to sanction the erection of a barn for flue curing, important developments are expected in the line of tobacco cultivation in the Irwin Canal Tract.

Cotton Cultivation.—Six varieties of Cotton were grown on the red loam each on three-fourths of an acre. These varieties are M.A. 2, M.A. 4, Local Doddahatti, C.O. 2, Cambodia and Selection 69. The field was infested with hariali and the yields obtained were not satisfactory. Among the six varieties, except for Selection 69, all the other varieties suffered from Red Leaf Blight.

Variety.	Yields obtained per acre in lbs. of seed cotton.
M.A. 2	391
M.A. 4	300
Local Doddahatti	358
C.O. 2	354
Cambodia	271
Selection 69	159

The cultivation of cotton will be repeated and two high yielding strains, viz., No. T. 38 and No. T. 42 of Punjab cottons will be included.

Small areas were devoted to the cultivation of Gingelly, Chillies, Onions and Garlic. Except in the case of gingelly and chillies, much difficulty was felt in marketing the other produce.

Horse-gram.—This crop was raised on an area of 104 acres, which yielded 145 pallas of gram which was entirely used for feeding the farm bullocks and the purchase of broken gram was averted for about nine months in the year.

Fodder Crops.—Fodder Jola, Rhodes Grass, Guinea Grass, Lucerne and Maize were grown as fodder for feeding the Farm bullocks. Fodder Jola was sown on 90 acres and an yield of 117 tons green fodder was obtained. Maize was sown on three acres and

an yield of $3\frac{1}{2}$ tons of green fodder and 1,000 cobs of maize were obtained. Lucerne was sown on one acre and four guntas and an yield of $8\frac{3}{4}$ tons of green lucerne was obtained for six months cutting. Lucerne is one of the daily rations of the Farm bullocks. The cuttings from Rhodes and Guinea Grass were utilised for planting out larger areas. Pine apple and plantains were planted on small areas and their cultivation will be extended.

Cocoanuts have been planted over an area of $6\frac{1}{2}$ acres and the crop is thriving well.

Groundnuts.—H.G. 1 and Valencia varieties of groundnuts were sown after the sugar-cane crop was harvested. The crop has done every well, the average yield being 3,000 seers of clean pods per acre. The haulms were used as manure for the paddy fields and also as cattle feed. This will be one of the important alternative crops that may well be extended in the tract.

Casuarina.—About 60,000 casuarina seedlings were planted out on the sides of valleys and the farm boundary and also along the low lying swamps. Two thousand plants which were planted about six months back have grown up very vigorously and when the other plants grow up they serve as wind breaks and are expected to draw off all the excess moisture stagnating in the soil. Every tree as it grows up adds to the permanent asset of the Farm. An annual yield is also expected from the loppings of the side branches as the trees grow up.

Drainage.—Drainage of excess water from water-logged fields was worked out extensively during the year under report. Twenty one acres of such soils were reclaimed at a total cost of Rs. 403, by cobble stone underground drainage and sugar-cane planted on these plots.

Botanical Section.—The Botanical Section continued tests on several indigenous and exotic varieties of sugar-cane. Several seedlings from POJ. 2878 were introduced into the test plot. Trials on cotton, tobacco, cereals, pulses, oilseeds and fodder crops were continued. A sum of Rs. 1,293-0-0 was spent under Botanical work out of the Farm Budget, during the year under report. A detailed report of work in the Section will be given by the Deputy Director of Agriculture.

Live-Stock.—One hundred and three bullocks formed the strength of the Farm Live-Stock, of which 35 were purchased and the rest got from the Live-Stock Section for training the animals for work. Since these animals came direct from the Kavals almost in a semi-wild state, they came in a poor condition and they always improved in condition after a few months. Ten pairs of these animals were sold in the Public Auction and a sum of Rs. 1,015 was realised.

As Mandya is well known for dairying and its butter supply, it would be educative to the raiyats in the neighbourhood if a small dairy is attached to the Farm to be worked on improved lines. The milk and butter produced may be sold to the members of the Staff on the Colony and the butter produced sold. Mandya town is expanding and there will be no difficulty in selling the surplus dairy produce, outside the Farm also. It is therefore suggested that the Director may be pleased to sanction the transfer of a few milch cattle from the Hebbal Dairy and also buy a few she-buffaloes for the Farm. The necessary dairy equipment to deal with about 50 lbs. of milk a day may also be supplied.

Visitors.—Chief among the visitors to the Farm were:—

1. The Dewan Sahab of Mysore.
2. Mr. C. B. Samuel.
3. Mr. Rama Reddy of Indian Central Cotton Committee.
4. Dr. W. Roemer of German University.
5. The Development Secretary.
6. Dr. C. Posthumous of Java.
7. The Chief Engineer and Secretary, P.W.D., Hyderabad State.
8. Mr. Ebrahim Mahadevi of Persian Agricultural Department.

The general health of the Colony was throughout good. The Assistant Surgeon of Mandya L.F. Dispensary paid his usual weekly visits to the Farm regularly. Supply of wholesome milk for the growing population of the Colony is a want. If a dairy consisting of six cows and six buffaloes is started, it will pay itself and supply the want. Not the least important question is the education of the children of the colony. Though steps were taken to move the Primary School of Ganadalu village to the Farm, the proposal could not be materialised for want of a suitable building located away from the residential quarters. Construction of a suitable building is therefore a pressing need for the Colony.

Farm Finances.—Against a sum of Rs. 98,528 provided for various expenses of the Farm during the year under report, a sum of Rs. 48,236-1-1 was expended under recurring charges, Rs. 9,107-0-4 for non-recurring charges, Rs. 15,000 surrendered and Rs. 26,184-14-7 lapsed. Lapses were inevitable as the claims were not admitted in audit in time to enable the claims being discharged. Surrenders were possible as strictest economy was exercised in working out the Farm.

Having charged off an interest at $5\frac{1}{2}$ per cent on the total capital outlay and valuing the cane at only what it cost us to produce it, for purposes of compiling the accounts as they stood on 30th June 1935, there has been a deficit of Rs. 7,856-13-3. As the standing crop of ripe cane over an area of 173 acres estimated to yield about 5,000 tons at Rs. 12 per ton is actually harvested and the accounts compiled later, taking into account the actual realisations on 5,000 tons of cane, the balance sheet is expected to reveal a surplus over the expenditure.

C. V. RAMIAH,
Superintendent,
Irwin Canal Farm.

Irwin Canal Farm.

ANNUAL REPORT ' THE COFFEE EXPERIMENTAL STATION,
BALEHONNUR, FOR THE YEAR 1934-35.

The Station is under the direct control of the Senior Assistant Director of Agriculture, Chikmagalur Circle. The Coffee Advisory Board held two meetings on the Station on 31st October 1934 and 17th April 1935. The same members as during last year continue to be on the Advisory Committee.

Mr. W. W. Mayne, B.Sc., Coffee Scientific Officer of the United Planters' Association, is continuing his investigations in connection with the coffee diseases and other problems connected with the coffee industry. Residential quarters are built for him close to the Station at the cost of the Association.

Health of the Station—The health of the Station continues to be satisfactory. There was an attack of small-pox but the patient recovered. Timely action was taken to get all the staff and labour force vaccinated and hence there was no further spread of the disease. During the year, three deaths occurred due to malaria and other causes. During the latter part of dry weather the water supply tank went practically dry and cases of malaria attacks were also found to increase at the same time. Some other adequate source of water supply to the Station seems essential.

Rainfall and Seasonal Conditions.—The total rainfall during the official year was 82.26 inches as compared to 101.27 inches in the previous year. It is therefore below the Station average by 20.01 inches. The main feature of the rainfall this year is the light and broken South-West monsoon and a comparative failure of the North-East monsoon. The precipitation from September onwards was appreciably small and therefore, general drought conditions set in earlier than in normal years. This condition lasted right up to April 1935. The scarcity of rainfall as well as its bad distribution adversely affects coffee in more than one way and its effect will be perceptible even after one year. Small showers about the time of greater activity in estate work retard the usual timely field operations. Fresh plantings of coffee and shade seedlings suffered a good deal and their growth was retarded.

A relatively dry summer checked the development of Leaf Disease to some extent but this reached its wonted proportions during the end of July and August and early September. The growth of new wood and development of older shoots was markedly poor after the on-set of dry conditions from September onwards. The insect pests were also favoured by the long dry weather. Green Bug assumed serious proportions than is usual on the Station. Borer showed up early in hot weather and showed marked increase over the previous year. Thus the year's rainfall has adversely affected coffee both as regards the future yield as also on the incidence of insect pests.

Blossom Rains for 1935 Crop.—At the close of January 1935 there was an insignificant shower of rain amounting to 0.3 cents. In the other parts of the coffee district the rains were much heavier at the same time and produced blossom to some extent. On the Station the blossom shower fell on 27th and 29th amounting to 0.22 and 0.18 inches respectively which was too meagre for a thirsty soil.* Therefore, blossom was uneven and part failed to come out. Robusta shared the same fate although it did better than neighbouring estates. Most of the Hybrid selections were a complete failure and the general impression that for a satisfactory blossom on Hybrids a very high rainfall is necessary is thus confirmed.

Timely and adequate rain for blossoming is a potent factor on which the year's crop yield depends. All the efforts to improve yields by scientific means are in vain if this factor proves adverse. In the year 1934, the blossom rains were just as light as in the present year—nevertheless the yield did not suffer so much as the drought conditions were not all so severe as during the present year. In spite of such adverse conditions it is a matter for comfort to know that the Station has not suffered so badly as some estates elsewhere. A crop of 9½ tons is estimated allowing for a loss of about three tons due to bad rains.

Experiments—These fall into three groups.—(a) Manurial, (b) Mycological investigations or disease control and (c) Plant Breeding.

* Details of blossoms shower—

March 1935—27th=0.22.
" 29th=0.18.

II. Blossoms, April 1935—

2nd April =0.54 4th April =0.16
3rd " =0.03 5th " =0.84

(a) *Manurial Experiments*.—The trial of organic and inorganic manures both individually and in mixtures and also in varying proportions are being continued as in previous years. (The scheme of experiments is published in previous reports). The experimental plots were slightly altered to control border effect and in spite of this the results are disappointing. It is now decided that the manurial experiments should be conducted in cisterns—containing even and controllable conditions of soil and shade. The details of results obtained are to be found in the report of the Agricultural Chemist for the period.

H. ion Cisterns.—The experiments are being continued as in previous years. The application of sulphur and calcium oxide in place of sulphuric acid and Sodium Hydroxide for the soil in cisterns seems to have had effect and it is expected that the soil reactions or the desired P. H. Values may be obtained very early.

Mycological Investigation or Disease Control.—The following experiments are being continued as in previous years :—

- (1) Testing of various fungicides and adhesives.
- (2) Time of spraying.
- (3) Testing of different strengths of mixtures.
- (4) Testing of different outfits.

The results obtained so far confirm the previous results as recorded already. Several kinds of oils are being tested as adhesives and as compared to casein, oils are found to be better, less expensive and easy to prepare the mixture. Molasses is being tried for the first time and this promises to be a good substitute for casein. Liquid copper containing sprays are found to be better than sulphur preparations. The question whether the use of an adhesive is absolutely essential in a spray programme and whether it will pay over and above the cost involved is engaging attention and will be gone into during the current year.

Time of Spraying.—From the harvest records of the past four years it can be definitely said now that both the pre-and post-monsoon sprays are essential to obtain maximum results. A pre-monsoon spray is preferred to a post-monsoon spray when two sprays cannot be undertaken for some reason or other ; especially so in the case of an estate subjected to heavy Black Rot.

Study of the Different Strengths of Sprays.—A perusal of the Station records reveals that half per cent is quite as satisfactory as one per cent bordeaux. Full strength, i.e., one per cent bordeaux has not shown any definite or appreciable gain over half per cent and therefore it is obvious that the most economical strength to use consistent with effectiveness is half per cent bordeaux. Results are furnished in Appendix.

Testing of Different Spraying Outfits.—During the year the following sprayers were tested :—

- (1) D.S.P. pattern pumps manufactured by the Mysore Government Central Industrial Workshop.
- (2) Myer's Cog Gear Double Action Pump.
- (3) Craven Headland and
- (4) Craven Power Sprayer.

1. C.I.W. Double Suction Pump works satisfactorily and also compares favourably with the Double Suction Pumps now in common use both as regards efficiency and output of work.

2. *Myer's Cog Gear Pump*.—This pump was very kindly sent by Messrs. The Limaye Brothers, Ltd., Madras, for purpose of testing. This is a small and handy pump worked by a single horizontal plunger fitted with leather bucket washers. The capacity of this pump is limited to the adoption of two hoses only. Considering its cheapness as compared to the other double suction pumps, it is cheaper and suited to small coffee estate owners.

The sprayer as is put on the market at present requires material alterations to the plunger in order to obviate wear and tear incidental to the use of grit in water, etc. Minor alterations have also been suggested to make the pump more suitable for coffee spraying.

Craven Headland and Hydrolux Sprayers.—These two sprayers were very kindly offered by Messrs. William Jacks and Co., Engineers, Builders, Merchants, Madras, for the purpose of trial on the Station. The Company took the trouble of importing these two pumps from the makers specially for getting them tried on the Station. The

two sprayers were thoroughly tested on the Station and a detailed report furnished to the firm.

Hydrolux Sprayer.—This is a high pressure motor sprayer designed to spray with two hose lines. It is very light and compact and all the working parts excepting the pistons and driving gear are enclosed in an oil-bath which adequately protects the parts. Steel pistons are provided which withstand wear. The work of this sprayer with two hose lines is satisfactory. Four hose lines can also be used with some difficulty and therefore not advisable.

Headland Sprayer.—The new Craven Headland pump is a well balanced and compact double suction pump. It weighs only 76 lbs. whereas the ones of the types tested hitherto on the Station weigh much more. The reduction of weight without detriment to the strength of pump is a very desirable feature in a spraying pump operated by manual labour. It is cheap as compared with cost of similar types of sprayers. Apart from its cheapness it possesses several advantages over similar pumps tested before. The pump is capable of taking four hose lines and yet gives a satisfactory spray at about 150 lbs. pressure without causing much fatigue to the pumping hands. In working, the Headland sprayer is found to be more economical than the Hydrolux sprayer.

I wish to take this opportunity of conveying my thanks to Messrs. William Jacks and Co., and the Limaye Brothers, Ltd., Madras, for their kindness in having sent the above sprayers at their own cost for purposes of trial.

Plant Breeding.—This work is being continued on the same lines as heretofore. Selection cross breeding and controlled pollination or selfing are the main lines on which the work is proceeding in order to evolve a suitable Arabica type of coffee. Disease resistance, high yield and good quality of the product are the principal characters that are kept continuously in view. Our present efforts are mainly directed to evolve a type which would give satisfaction on all these points. In Robusta only selection work is being pursued. During the year under report no new selections of Arabica were added to the Station collections. The Station is indebted to Mr. I. Garret, Tea Estates of India, Ltd., for the following three strains of coffee, viz., Robusta, Quillow and Liberica.

The details of turn out in Plant Breeding from 1931 to 1935 are given in Appendix. During 1935 blossom period, a number of plants in families grown from controlled pollination in the year 1931 were self-fertilised and also a number of cross pollinations carried out on plants of similar origin. The second generation seedlings are now growing in nursery beds which will be transferred to permanent plots later on. Individual plant yield records have been made from a number of families to see how far yield is a hereditary characteristic.

The work of Plant Breeding is one involving patience, considerable time and resources. Designed breeding work cannot be rushed through to produce immediate results. However, we are proceeding on the right lines and the results at our disposal give us enough hope for achieving something tangible in a few year's time.

During the year seven acres of jungle have been cleared to plant out Station bred plants.

Vegetative Propagation.—(a) *Grafting.*—The prolonged drought conditions adversely affected the grafts also in the field. It was indeed a bad year for them. Grafts made in the field on Arabica-Hybrid stocks using Arabica Scions seem to fare better than those on Robusta stocks. Instances of incompatibility of stock and scion in Robusta-Arabica grafts are more noticeable than in Arabica-Hybrid and Arabica grafts. Grafts done on stumped Robusta—5 to 6 years old—have done exceedingly well. Therefore, it is probable that we may have to use older Robusta stocks than one or two year old seedlings to save disappointment. Further work to investigate these points is being taken up.

(b) *Rooting of Cuttings.*—It was ascertained during the previous year that coffee could be propagated by cuttings. The proper season for this kind of work seems to be from March onwards up to August. However, the mortality of cuttings in the germinating bed is often too great. They begin to rot from bottom upwards. A propagating chamber has been constructed on the principle of the Solar Propagator to study whether cuttings can be grown successfully under controlled heat conditions. Derris and orange cuttings rooted freely inside the propagating chamber while those planted in beds had failed.

Cardamom.—There are nine selections of cardamoms and these are named after the district of their origin. Three main varieties represented in our collection are:—

- (1) Malabar.
- (2) Mysore.
- (3) Valparai (Wynaad).

Among these, the first two seem to bear well on the Station. Although the Valparai variety grows more luxuriously than others, it is the poorest yielder. The best yield is from the Malabar variety which is the one mostly cultivated in Mysore. What is known as the Mysore variety is a hill cardamom—a good yielder and grows and thrives better than the first variety.

Six of the best plants have been selected to record individual yields. A study of their botanical character is also being made. It has been decided to take up manuring experiments on cardamoms and for this purpose a few selected clones are being multiplied to provide even planting material.

Entomological Investigations.—At present no Entomological investigations are undertaken on the Station, for, such work as the Coffee Borer beetle pest is engaging the attention of the Entomologist elsewhere in private estates.

The Farm does not usually suffer from heavy attacks of green bug or coffee borer. This year owing to the prolonged drought conditions, both these pests seem to have slightly increased. However, there is nothing very serious to complain about their havoc. The usual precautions against them have been taken promptly.

Other Experiments.—(1) *Protecting Dadap Stakes (Erythrina Lithosperma) from Sun Scorching by means of White-washing*.—An experiment was conducted to find out an easy and less costly method of protecting palvan stakes from scorching. White-washing has given 88·8 per cent success as compared to 26·1 of controls and 42·6 per cent of those protected with Aloe leaves. The white-washing method is cheaper by nearly 50 per cent as compared to the other method.

(2) *Experiment on the Germination of Different (Sources of) Arabica Coffee Seeds*.—The following Arabica seeds were tested for germination:—

- (1) Seeds of Arabica made in the usual way.
- (2) Freshly hand pulped beans put into bed with the mucilagenous coating.
- (3) Seeds collected from bird droppings.
- (4) Seeds from monkey or other animal droppings.
- (5) Wet parchment taken out from Vats.
- (6) Dry parchment from store.

Two hundred seeds from each group were taken and put into beds on the same day (excepting item 5) under identical conditions. Seeds from bird droppings were the first to germinate and dry parchment was the last. Even the percentage germination is better in the seeds collected from bird dropping and lowest in the seeds collected from animal droppings. From these experiments, it can be inferred that in case the seeds are not wanted for storing purposes, they can be put out immediately they are pulped. This will save some eight to ten days time. These experiments will be repeated.

(3) *Depth of Sowing Seeds in Beds*.—An equal number of seeds was sown in a well prepared bed at the following depths:—

Half inch, one inch and $1\frac{1}{2}$ inches. The germination was quickest in half inch sowing and longest in $1\frac{1}{2}$ inches sowing. For complete germination each series took 76, 96, and 112 days respectively. The same result has been confirmed by a previous experiment. This experiment indicates the importance of depth of sowing of seeds in beds and any depth beyond $\frac{3}{4}$ inch is not conducive to quick germination. Besides, if conditions are unfavourable, such as excessive dampness of beds, deep sowing is certainly the cause for loss in germination.

(4) *Growth of Coffee Seedlings in Nursery under Different Soil Compositions, i.e., Jungle Soil and Cattle Manure*.—It is usual in estates to mix cattle manure and jungle soil in the composition of coffee seedling beds and baskets. There are cases where one or the other is wanting, to make up the soil. An experiment was laid out to find out

optimum conditions for plant growth. The following different compositions of soil and cattle manure were used.

- (1) Only jungle soil (humus).
- (2) Jungle soil and cattle manure (1 : 1 ratio).
- (3) Do do 1 : 2 „
- (4) Do do 1 : 3 „
- (5) Do do 2 : 1 „
- (6) Do do 3 : 1 „
- (7) Only cattle manure.

The indications of results were as follows :—

Only cattle manure or jungle soil is not conducive to vigorous growth. Plants grown in these showed pale colouration while the rest had dark green leaves and their height and growth were also markedly superior. Plants grown in medium containing either only jungle soil or cattle manure in three parts showed the shortest average growth. Therefore it seems inadvisable to apply more than adequate quantity of cattle manure for beds or baskets. The best proportion seems to be 1 : 1 or 1 : 2.

5. *Test on the Keeping Quality of Nursery Baskets by steeping in Copper Sulphate Solution.*—It has been ascertained by experiments that untreated baskets do not last long enough in the nursery and by the time the plants are ready to be put in the fields, they will have nearly or completely been rotten, so that in the majority of cases their use becomes a questionable one. Hence an experiment was instituted to find out the effect of copper sulphate solution on the keeping quality of nursery baskets.

This series of experiments were conducted in three successive years from 1932 to 1934. Varying strengths of copper sulphate solution from 10 per cent to 2 per cent have been tried. It is found that mere steeping in cold solution does not produce the desired effect. Boiling in copper sulphate solution for about three to four minutes is found to be absolutely essential to keep the basket in tact for over seven months. A two per cent strength is found good for short duration and a higher concentration must be used if the baskets are intended to be in the nursery for over seven months. Treated baskets have been recovered in a slightly digested condition after being in the soil for over four months. This illustrates the effect of copper sulphate on the basket tissue. The presence of copper sulphate in the tissue of the baskets repels destructive moulds and fungi and hence their longer keeping quality.

6. *Use of Pea-berry Seeds for Planting Purpose.*—A small plot of ground is planted with coffee seedlings raised from pea-berry seeds. The maiden crop picked gave 1988 fruits which analysed into 1,491 flat beans, 176 light, 446 pea-berry and 53 three-seeded beans. The plants look quite normal and produce good crop. This experiment has disproved the impression prevailing among certain planters that pea-berry should not be used for raising seedlings as this would tend to produce non-bearing male plants (gandu gida). It is evident from the experiment that pea-berry seeds can be made use of for raising seedlings and the discarding of such seeds is found to be unjustified.

7. *Methods of Planting.*—Coffee seedlings were put in the field in the following manner :—

- (1) Baskets in tact.
- (2) Baskets removed.
- (3) Root plants.
- (4) Bed plants (with ball of earth).
- (5) Plants removed with the transplanter.

The seedlings taken out from the beds in the above conditions were planted in the field on the same day and their growth and condition watched at the end of the season. Section planted with root plants looked poor and many vacancies were noticed while in other sections there were not so many vacancies. The above experiment will be tried on a larger scale and the result reported.

8. *Pruning Experiments.*—There are two important schools of thought regarding pruning. One section is of opinion that pruning is essential to maintain coffee bushes in good health and the other believes that no pruning is required and in their opinion coffee does well if not much disturbed. Another view is also expressed that judicious centering is all that coffee requires. At present much of this work is guided by personal experiences and exigencies of the circumstances and environmental conditions. Experimental evidence either for or against pruning is still wanting. To clear up misconception and to systematise if possible this part of work a series of experiments on pruning had been

instituted in the year 1933. There are four treatments (1) No pruning; (2) Light pruning; (3) Heavy pruning and (4) Handling, consisting of four replications. Thus we have 16 plots laid out in the manner of a latin square. The yield figures of the first year do not reveal significant differences due to difference in treatment. We may have to wait two or three years more to get conclusive results.

9. *Growth of Coffee in Soils Burnt to Different Degrees.*—Definite information on the point whether land (jungle) intended for coffee should be burnt or not, is lacking. Although popular opinion is not in favour of it, yet in the majority of cases indiscriminate burning of soil and destruction of vegetation is the rule. It is a well-known fact that injudicious burning of the soil leads to wastage of humus content in the soil and eventually lessens its water holding capacity. Experimental plots have been laid out to test the condition of Arabica and Robusta coffee grown on soils burnt to different degrees. A small piece of jungle was selected for this purpose. In one set of plots the soil has been heavily burnt by using logs of wood. Logs were placed side by side and set fire to. The soil when examined later on showed baking into red brick colour from an inch up to a depth of three inches. In light burning only small branches, brush wood, etc., that were left after removing the logs were set fire to and the result recorded. In this case there was no baking but the soil had retained the dull chocolate and black colour.

The third series is the control plot. Robusta and Arabica plants of even size were selected and planted. Owing to the prolonged drought and absence of shade there were a few casualties among the seedlings. Results of observation and performance of coffee in these plots will be reported in due course.

10. *Cultivation Experiments.*—Hitherto, soil cultivation methods have not received the attention of the Coffee Station for want of suitable land for experiments and also time. During October 1934 the following series of experiments have been laid out in three repetitions. The land selected cannot be said to be ideal for the purpose but whatever land was free for absorption for experiments has been taken up. Soil cultivation methods such as deep digging, renovation pits, trenching and light digging are compared with no-treatment plots.

At present there is a lot of misconception regarding the advisability of the use of any one or more of these practices in particular soils and environmental conditions. Soil cultivation in the manner suggested above is believed to ameliorate the physical conditions of soil, tilth and water holding capacity which have a bearing on the health of the coffee tree. "Cold feet of coffee" in excessive wet soils, is a frequent cause of leaf drop and subsequent die back. The present series of experiments are designed to study and investigate matters connected with individual practice in relation to health of coffee and optimum soil conditions for its growth.

Fruit Cultivation.—The following varieties of fruits are tried on a small scale to find out their suitability and yield under mahad conditions.

(1) *Oranges.*—Coorg, Yenmedoddi, Washington Navel and Valencia.

All these varieties are represented and it is proposed to add Nagpur, Sathgur and Malta during this year. Coorg and Yenmedoddi have been planted on a large scale and it is also proposed to take up budding of oranges on sour orange and pomelo stocks which are being got ready. A few budded Yenmedoddi oranges are coming up well. Later on, it is proposed to use bud wood from these when they grow up well.

(2) *Plantains.*—A few suckers of the following varieties of plantains are under trial :—

(1) Rasabale, (2) Votabale, (3) Puttabale, (4) Hoobale, (5) Madhurangabale and (6) Chenorabale.

(3) *Cashewnuts.*—During the year 1930-31 a couple of hundred cashewnut seeds were dibbed in the soil along either side of the main road leading to the Farm. Plants were noted to come up well and encouraged by the result, some more seeds have been put down in the waste land adjoining the coolie lines. About 65, four year old plants are doing quite well. It seems that cashewnut can be grown in poor gravel type of soil in mahads but protection from cattle is essential.

Tungoil Plants.—About 75 plants were put out during 1930 and now there are 24 plants aged four years. They are not seen to do particularly well in our locality.

They shed their leaves in summer but it is understood that this habit is not natural to them in their natural habitat. It is doubtful if they will prove a success in these parts.

Pepper.—The two important types—Balamkota and Kalluvalli pepper vines under trial, have begun to bear. The former variety seems to do well on the Station and therefore as many layerings as can be had from the vines are being obtained for multiplying purposes. Besides, methods of layering such as basket and bamboo cylinders are under investigation.

Visitors and the Field Day. It is gratifying to state that the Station continues to attract planters and others from in and outside Mysore State. Sixty-four planters visited the Station as compared to 65 during the preceding year apart from those who visited the Station on the Field-Day. Her Highness the Third Princess and party visited the Station during the year.

Field Day.—A Field Day was held on the 27th November 1934 in commemoration of the opening of the Station by His Highness the Maharaja of Mysore. *Rajamantrapravina* S. P. Rajagopalachari, Esq., B.A., B.L., Second Member of Council, presided on the occasion. One hundred and twenty-six planters and others representing manure distributors and coffee curers attended the function. Several planters from the neighbouring province of Coorg gladly responded to our invitation.

Many planters who had to motor long distances expressed a sense of disappointment in not being able to see every thing in detail on the Station. They hoped that in future the Field Day function should be spread over two days—one day for field inspection and the second day for discussion.

On the whole the Field Day was a great success and our sincere thanks are due to all the planters who took the trouble of responding to our invitation at great personal expenses and inconvenience to themselves. Our thanks are also due to the members of the Coffee Advisory Committee and particularly to Mr. L. Garrett, the Tea Estates of India, Ltd., Balchonnur Estates, Durgadbetta, for his kind co-operation in lending furniture, etc., needed on the occasion.

Education of the Children.—A Primary School is provided for educating the children of the staff and labourers. The District Board of Kadur has very kindly lent the services of a teacher to the Farm School. An adult Night School is also run for the benefit of the labourers. The institution has become popular and it is gratifying to state that children from the neighbouring villages also attend this school.

Buildings and Accommodation.—The present buildings occupied by the staff require slight alterations and additions to make them more suitable to the real needs of the occupants. Further more, a school room, a house for the teacher, two cooly lines, store house and pulper house are all urgently needed. The pressing need for the extra quarters, etc., has been felt for a long time but owing to paucity of funds, work could not be taken in hand. It is hoped that sufficient provision will be made as early as possible to get these buildings put up.

Seed Distribution. There were indents both for 'Kents' Arabica and Robusta seeds which were obtained and distributed. In all 18 indents covering 20 seers of 'Kents' Arabica and 112 seers of Robusta were complied with. In addition to this, there was demand for green manure seeds specially for *Crotalaria anagyroides* and *usaramoensis*. One hundred and twenty-three lbs. of green manure seeds were sold during the year.

Library.—The Library on the Station consists primarily of literature on coffee. The following Station bulletins and pamphlets were published during the year:—

- (1) Annual Report of the Coffee Scientific Officer for 1933-34.
- (2) Hand Book of the Station.

Coffee Yield and Disposal.—A crop of 13 tons, 1 quarter and 17 lbs. was realised being 9 tons, 1 quarter and 12 lbs. of parchment and 4 tons and 5 pounds of cherry. The average outturn of parchment and cherry was 88.44 and 125 respectively. Considering the locality and the neighbouring estates, the outturn is satisfactory.

Programme.—All the items of investigations detailed in the preceding paras will be continued.

Y. R. NARAYANA RAO,
Farm Manager.

K. H. SRINIVASAN,
Senior Assistant Director.

Balchonnur Farm.

Statement showing the yield in the Varietal Spray block during the year 1934-35 with average yield for four years, per acre.

Sl. No.	Treatment	Yield per acre of 1,200 plants during 1934-35	Average yield per acre of 1,200 plants for four years
1	Checks	555	949
2	Casin bordeaux	361	2,506
3	Linseed Bordeaux, 10 Ozs.	573	2,277
4	No adhesive Bordeaux	270	2,380
5	Resin Bordeaux	707	2,223
6	Fish oil Burgundy	712	1,734

This was sprayed with casein bordeaux in September 1934.

Comparative statement of rainfall on the Coffee Experiment Station, Balehonnur, for the year 1933-34 and 1934-35.

Months		1933-34	1934-35
		Inches	Inches
1.	July	32.89	28.85
2.	August	19.08	26.77
3.	September	14.15	4.06
4.	October	11.55	7.03
5.	November	1.09	0.13
6.	December	0.52	.....
7.	January	0.28	0.03
8.	February .. .. .	.....	.....
9.	March	0.33	0.40
10.	April	1.11	1.57
11.	May	2.03	1.28
12.	June	18.24	12.14
Total Inches ..		101.27	82.26

Statement showing the yield in the Time and Strength Spray Block during the year 1934-35 with average yield for four years per acre.

Sl. No.	Treatments	Yield per acre of 1,200 plants during 1934-35	Average yield per acre of 1,200 plants for four years
1	Check	2,029	2,267
2	Pre and Post 1.0	2,415	2,589
3	Check	1,878	1,340
4	Pre only 1.0	3,056	2,484
5	Check	2,412	1,853
6	Pre and Post 0.5	2,408	2,844
7	Check	2,093	1,519
8	Pre only 0.5	2,614	2,337
9	Check	1,693	1,439
10	Post only 1.0	1,556	1,508
11	Check	2,002	1,295
12	Post only 0.5	1,632	1,729
13	Check	2,320	1,507

Y. R. NARAYANA RAO,

Farm Manager

Balehonnur Farm.

K. H. SRINIVASAN,

Senior Assistant Director.

REPORT OF THE JEEVANARAYANAKATTE AGRICULTURAL DEMONSTRATION PLOT FOR 1934-35.

Seasonal Conditions.—During the year under report, the seasonal conditions were not favourable and the early rains failed completely, in consequence of which the whole cropped area had to be irrigated both by pumping water and through hydrants, but at the time of Dasara there was a heavy downpour which resulted in complete lodging of the sugar-cane crop.

2. *Crops.*—The cropping scheme adopted during the year is herewith appended.

3. *Sugar-cane.*—This crop had on the whole an excellent growth but it lodged heavily. Excepting the lodged canes all the rest were distributed for seed purposes.

4. *Paddy.*—About 12 varieties, both indigenous and exotic, were tried in small plots. G.E.B. 24 and Nagpur Fine (S. 246) gave 40 pallas per acre, P.S. 49 coming next with 38½ pallas per acre.

5. *Ragi.*—H. 22, H. 40, H. 45, H. 2, Local Hullubele, and white Ragi were tried. H. 22 and H. 2 have given 1,720 seers and 1,700 seers per acre respectively. Experiments were also tried on Kar Ragi varieties. K. 1 has produced the highest yield, viz., 16 pallas per acre.

6. *Groundnut.*—The groundnut crop was excellent in growth but just before the time of harvesting the whole area under groundnuts was attacked by cut-worms. All precautions were taken to exterminate them. Since the attack was in the later stage, the crop did not suffer much. The marginally noted varieties were tried on the Farm. Small Japan has given the highest yield of 25 pallas per acre, the next in yield being H.G. 1.

Jola, Sunnhemp, Castor, Cotton and several varieties of grass were also grown on a small scale and their growths were good.

7. During the Dasara the whole Farm presented a beautiful appearance and it was visited by thousands of people of whom the distinguished personages were the Chief Justice in Mysore and the Chief Engineer of Mysore. They were well impressed with the work of the Farm and expressed their appreciation.

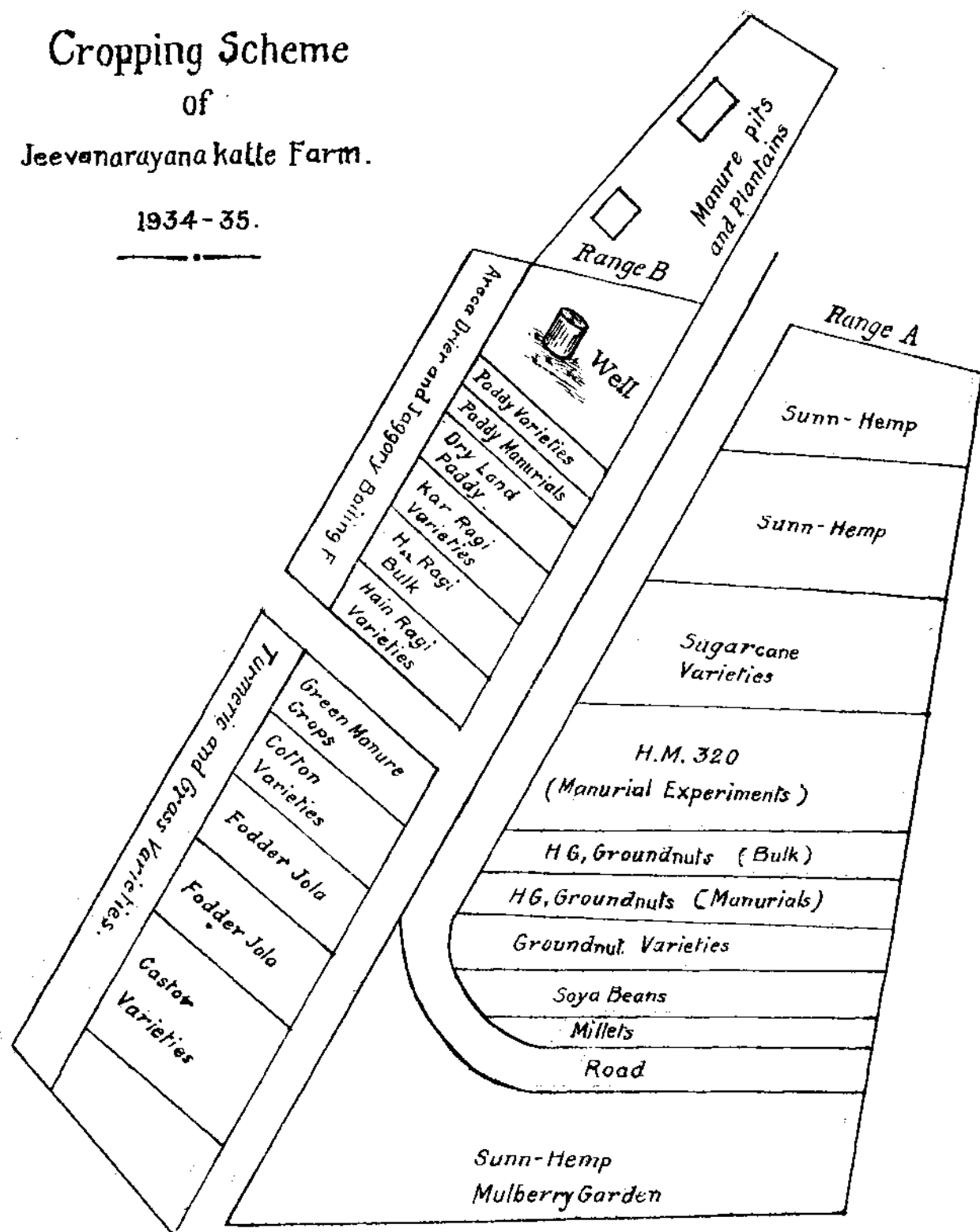
B. SANKAR RAO BADAMI,

*Headquarters Assistant to
Director, in-charge.*

H. G. 1.
Valencia.
Tennessec.
Senigal.
Small Japan.

Cropping Scheme of Jeevanarayana katte Farm.

1934 - 35.



B. Sankar Rao Badam.

Headquarters Assistant to Director, In Charge.

Ch

**REPORT OF WORK DONE IN SRI KRISHNARAJENDRA VYAVASAYA
DHARMA PATASALA, CHICKANAHALLI, FOR THE YEAR 1934-35.**

Staff.—Mr. K. Rama Iyer continued as Head Master and was in-charge of the School till 4th October 1934. Mr. K. S. Ramachandra Murthi took charge of the School on 4th October 1934 afternoon and continued to the end of the year under report.

Change.—Mr. K. Rama Iyer, Head Master, was transferred to Goribidnur Range as Agricultural Inspector from 5th October 1934.

Fieldman R. Sivarama Sastry was transferred to Madhugiri and his place was taken by S. Rama Rao, Fieldman, transferred from Madhugiri. The latter was deputed to Hebbal Farm to undergo training in jaggory boiling and furnace buidling work there.

Leave.—No officer was on long leave during the year.

Library.—Six more books were added to the Library during the year and the students made use of the books freely.

Revenue Realisation.—A sum of Rs. 227-15-3 was realised as follows:—

					Rs.	a.	p.
Seeds	..	..	..	..	155	7	11
Seeds through book adjustment	..	..	..	..	34	8	10
Implements	..	..	..	..	36	14	6
Vegetables	..	..	..	..	1	0	0
Total					227	15	3

Financial Statement is appended.

Seasonal Conditions.—Rainfall as recorded in the school is given below:—

						Inches.
July 1934	..	..	..	..	..	0·65
August 1934	..	..	..	..	..	0·99
September 1934	..	..	..	..	..	1·19
October 1934	..	..	..	..	..	9·58
November 1934	..	..	..	..	..	0·14
December 1934	..	..	..	..	..	..
January 1935	..	..	..	..	..	0·75
February 1935	..	..	..	..	..	..
March 1935	..	..	..	..	..	..
April 1935	..	..	..	..	..	4·16
May 1935	..	..	..	..	..	3·43
June 1935	..	..	..	..	..	1·87
						22·76

Owing to adverse seasonal conditions, almost all dry land crops failed and the result was poor yield as noted under:—

Crops				Area sown		Quantity yielded	Approximate value
				Ac.	Gun.		Rs. a. p.
Ragi	..	..	..	4	14	755 srs.	60 0 0
Groundnuts	..	..	..	3	0	873 lbs.	50 10 0
Paddy	..	..	..	0	25 rainy season	1,594 srs.	103 12 0
				0	25 summer.		
Jaggory	..	..	..	0	7	18½ mds.	28 14 6

Sugar-cane lodged very badly due to heavy storm. Most of the canes had been uprooted. Hence the quality and quantity of the yield is low. Further the crop was stunted. Here and there, there were gaps.

Owing to failure of rains fodder scarcity arose. It was with greatest difficulty that sufficient quantity of fodder was purchased to feed the bullocks. Ryots round about resorted to feeding of their cattle with date leaves.

Work of the Patasala.—The Patasala began its sessions on 1st July 1934, with only six students on the roll, of the 15 students selected by the Board for the year. At the end of the month there were eleven students. Some more students joined the school by the first week of September making up in all 16. Out of the sixteen, one was a special and non-stipendiary student. He remained in the school till the end of December 1934.

Classification of students.

By Districts.

Kolar	..	..	..	..	4
Tumkur	..	..	..	..	8
Mysore	..	..	..	..	4
					—
Total	..				16
					—

Out of the 16, one was a special student.

By Communities.

Brahmins	..	..	..	..	3 (One special student.)
Lingayet	..	..	..	..	1
Mohamadans	..	..	..	..	2
Kurnba	..	..	..	..	1
Vokkaligar	..	..	..	..	5
Adikarnataka	..	..	..	..	1
Uppara	..	..	..	..	1
Kunchitiga	..	..	..	..	1
Banajiga	..	..	..	..	1
					—
Total	..				16
					—

All the fifteen students selected for the year were given Government scholarship of Rs. 12 each, per month.

Attendance.—Total number of class days was 271. Average number of days students actually attended was 161·7 which works up to 59·7 per cent of the total number of working days.

Fall in the average attendance is due to some of the students joining Patasala late in August and September, and due to some stopping away for weeks together owing to ill-health and other causes.

Health of Students. Except in case of two or three, all others kept up good health. The Sub-Assistant Surgeon, Sira, visited the school once a week and inspected the students for purposes of health and necessary medical aid.

Courses of Instructions. (1) Lectures on Agriculture and allied subjects as per syllabus were delivered in Kannada to the students.

They attended practical classes in Veterinary at Sira Dispensary and the theory portion was taught by the Veterinary Inspector at the school.

(2) *Carpentry and Smithy Class.*—Students were given practical training in smithy and carpentry. They prepared themselves several agricultural implements required for the Farm, such as Sickles, Cultivators, Country plough shares, Splitting axes, Kurgiges and Bill hooks. They attended to the fixing of barbed wire fence round the 'B' section of the dry area. The big iron gates of the school were repaired by the students themselves.

In addition to general field work, the students maintained a vegetable garden and all the labour required on the farm was contributed to by them.

Sports and Reading Room.—Students maintained a volley ball court and subscribed for the following newspapers :—

(1) Vrittanta Patrike	..	..	..	..	} Weekly.
(2) Vokkaligara Patrike	..	..	..	..	
(3) Tai-Nadu	..	..	..	..	Daily.
(4) Mysore Gazette	..	..	..	..	For eight months only.
(5) Journal of the Mysore Agricultural and Experimental Union	..	..	..	..	(Kannada).
(6) Viswakarnataka	..	..	..	..	Weekly

In addition, the "Arthasadhaka Patrike" got by the school was lent to them.

Excursions.—Owing to want of provision under T.A. in the budget, excursions had to be dropped. Students were taken to the Sibi Cattle Fair at no extra cost. As the training given to students requires to be supplemented by observations of agricultural operations and crops on private holdings and Government Farms, it is quite essential that excursions should be encouraged as in previous years by adequately providing grants under T.A. and excursion in the budget; else it cannot be said to be the kind of training intended.

Final examination of students for 1934-35 was held on the 10th and the 11th of June 1935. Out of 15 students, only 14 sat for the examination and all of them passed.

Hostel.—Students as usual managed the hostel with the help of the Agricultural Fieldman as Hostel Manager.

Bhajana Room was equipped with big-sized photos of Deities. Students conducted daily prayers and weekly bhajanas.

School Day. The nineteenth anniversary of the School was held on 28th July 1935, under the Presidentship of the Director of Agriculture in Mysore when certificates and prizes were awarded to successful students.

K. S. RAMACHANDRA MURTHY,
Head Master,
S.K.V.D. Patasala.

C. ELLAPPA CHETTY,
Offg. Sr. Assistant Director.

Financial Statement of S.K.V.D. Patasala for the year 1934-35.

Sl. No.	Budget Heads	Sanctioned allotments	Additional grant	Allotment by reappropriation	Total	Expenditure during the year	Bill adjustment	Total	Balance
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
1	Establishment	744 0 0	.....	.....	744 0 0	744 0 0	.....	744 0 0	.....
2	Scholarships	2,160 0 0	.....	.....	2,160 0 0	1,970 15 0	.....	1,970 15 0	189 1 0
3	Contingencies	600 0 0	800 0 0	.....	1,024 0 0	1,849 3 0	74 12 3	1,923 15 3	0 0 9*
4	Travelling Allowance	75 0 0	.....	20 0 0	95 0 0	94 11 0	.....	94 11 0	0 5 0
5	Books and Journals	20 0 0	.....	.....	20 0 0	19 15 0	.....	19 15 0	0 1 0
	Total	3,599 0 0	800 0 0	544 0 0	4,943 0 0	4,678 12 0	74 12 3	4,753 8 3	189 7 9

* Includes Rs. 15 granted for repairs to Head Master's quarters and also a sum Rs. 103 which was arrears paid to the contractor for work during last year, i.e., 1933-34.

Chickanchalli.

REPORT OF WORK DONE AT RAMAKRISHNA KRISHISALA DURING 1934-35

1. *Establishment.* Mr. H. Shankaranarayan was in-charge of the institution as Head Master during the year assisted by an Agricultural Inspector and a fieldman.

2. *Number of Students.*—The academical year started with 11 students on the roll and one student joined subsequent by bringing the total to 12. In the middle, one student dropped owing to various reasons and only 11 were on the roll at the close of the official year. They are arranged according to communities and districts below.

Brahmins	8	Bangalore District	5
Vokkaligars	2	Mysore	2
Other caste	1	Kolar	3
		Chitaldrug	1
Total		Total	11

The final examination was conducted during the second week of June 1935. All the eleven students were successful in the examination of whom one stood first in first class for the Province, and the others secured a pass.

Applications were invited for the selection of students for the coming year and 15 students were selected by the Advisory Board.

3. *Practical Instructions in Agriculture at the School.*—(a) *Farm.*—As the period of instruction covers one full year, the students were able to do all the items of work themselves, viz., preparatory cultivation, operations from sowing to reaping and harvesting, Sugar-cane milling, jaggory boiling and attention to Farm Live Stock, etc. The practical work connected with the following crops was given (1) *Dry.*—Ragi, Groundnut, Gingelly, Horsegram, Jola, Thogari, Castor, (2) *Wet and garden.*—Paddy, Sugar-cane and Vegetable crops.

(b) *Veterinary.*—The instructions both in theory and practice were as usual imparted to the students by the Veterinary Inspector, Anekal.

(c) *Carpentry and Smithy.* Instructions were also imparted in the manufacturing of farm tools, viz., Sickles, Varvaries, Plough shares, Slip points, etc., and the K.M. type shares manufactured on the Sala with the help of the carpentry and smithy instructor have attracted the public and demand for them is increasing every day.

(d) *Reading Room.*—The school reading room continued to be maintained. The following papers and journals were subscribed for, viz., (1) Arthasadhaka Patrike, (2) The journal of the Agricultural and Experimental Union, (3) Farmers and Farming of Dharwar. It is keenly felt that there should be some more additions to these journals.

(e) *School Day.*—The school day functions did not come off during the year on account of unavoidable reasons and the same is postponed for the next year.

(f) *Weekly Bhajana.*—Every Saturday students gather in the Hanuman Temple and conduct Bhajana.

(g) *Jaggory Boiling.*—Sugar-cane was grown on the Farm to the extent of 1 acre and 3 guntas. The chief varieties tried were H M 320, H.M. 544, H.M. 533, J. 33.A., P.O.J. 2878 and local. All the canes were milled and jaggory was prepared by the students on the improved furnace. About 324 Mds. of jaggory was obtained.

(h) *Dairy Work.*—The students were imparted instructions in this line including several items of work, such as feeding the cattle, milking the animal, etc.

(i) *Spraying Work.*—The spraying work was done by students on potato crop against Alternaria and Epilachna successfully and spraying cabbage against Aphids was also undertaken with the help of the scientific Section of the Department.

(j) *Hostel*.—The hostel as usual was managed by the students with the assistance of the school staff when necessary. All the Sala produce is being consumed by the students themselves. On the whole the health of the students was found satisfactory.

4. *School Farm*.—*Crops grown*.—They are (a) Wet crops, (1) Paddy, (2) Sugar-cane, (b) Dry Crops, Ragi, Jola, Thogari, Groundnut, Horsegram, Til, etc., and (c) *Garden crops*, Potato, Plantain, Cabbage, and vegetables which were chiefly grown by the students and consumed by themselves.

Orchard and Plantains.—Training was given in the growing of fruit plants and raising nursery for the growing of plantations.

Mango Thopes at Kachakanahalli.—There are 157 mango trees in Kachakanahalli village and they require proper fencing to prevent the trespass of stray cattle.

Farm Produce.—The total approximate value of the School farm produce of different crops grown during the year amounted to Rs. 2,276 and that of produce grown by tenants Rs. 1,088.

5. *Advisory Board*.—The number of meetings of the Board was same as in the previous year, viz., four. There is no change in the personnel of the committee.

6. *Buildings and other Permanent Improvements*.—The construction of a draw well was undertaken between the Head Master's and staff quarters, and the roofing of the carpentry and smithy section was repaired.

7. *Live Stock*.—The unserviceable ones were ordered to be sold and the purchase of fresh stock could not be taken up for want of sanction in time.

8. *District Board*.—Our thanks are due to the District Board, Bangalore, for having permitted us to collect manure, free of cost, at Hennagara Jatra cattle fair.

9. *Excursion*.—The students were taken round about the jatra and estates without involving extra cost.

10. *Conclusion*.—There were more than 200 visitors to the school which has received the co-operation of many gentlemen, both official and non-official to whom our thanks are due.

S. DANIELL,
Assistant Director.

REPORT OF THE MYSORE CIRCLE FOR THE YEAR 1934-35.

Seasonal Conditions. The seasonal conditions during the year were not very satisfactory. The rains were somewhat fair and about eight annas crop of Kar Ragi and Mungar Jola was got in Hunsur and other Kar Ragi growing areas in this circle. Groundnut, Til, and Jola withered away in many places for want of timely rains. The hain crop, viz., Ragi, was not a success; sowings were postponed till the end of July and it had to be sown late, in some cases till Makha rains (End of August). In many cases, the germinations were not satisfactory for want of sufficient moisture. After that rains ceased till the first week of October 1934 by which time most of the germinated crop had withered away.

Fodder scarcity was very keenly felt, specially in Nelamangala, Kankanhalli and Nagamangala taluks of the circle. Bili Jola seeds were got from the Western Division and distributed for growing of fodder. This crop also was not a thorough success due to various reasons. People that owned black soil specially in Chamrajnagar and in parts of Nagamangala taluks got at least enough fodder for their starving cattle and those who sowed the seed in red soils in anticipation of getting the last rains were utterly disappointed, as there were no further rains.

Popularisation and Sale of Implements.—The district demonstration work has been on the usual lines and demonstrations in ploughing, cultivating, jaggory boiling, etc., were held as usual on the ryots, own holdings, to the extent of the funds available. The number of such demonstrations held during the year was 243 as against 311 of the previous year. The sale of implements during the year is detailed in the statement appended to this report. It is not at all promising as the ryots have no money for the purchasing of the implements, etc., and as they themselves get these ploughs manufactured by the local blacksmiths. The efficiency of K.M. and K.M. type ploughs is reported to have been very well understood by the ryots and the general opinion regarding K.M. type ploughs is satisfactory. But it is reported that the price, viz., Rs. 15-12-0 is higher than that of the local made ploughs available at a cost of Rs. 10 to Rs. 11 each, which are also turning out equally satisfactory work.

MANURES.

(a) *Cattle Manure.*—Agricultural Inspectors and their staff continued as usual to advocate better method of collecting and conserving this manure.

(b) *Green Manure.*—Growing of sunnhemp in wet lands as a green manure crop was largely advised to the ryots and in the two Districts of Mysore and Bangalore about 46 pallas have been sold during the year as against 45 pallas in the previous year.

(c) *Oil Cake.*—The application of oil-cake to supplement the Nitrogenous manure and also the use of Super-phosphate to mitigate the harmful effects of these are reported to have been advocated, the kind, quality and the methods of application being instructed whenever necessary.

(d) *Artificial Manures.*—Fertilisers for sugar-cane and paddy have been continued to be largely used this year also. Their uses are reported to have been brought home to almost all ryots. The total distributions of these manures are given below. As the Government Depots have discontinued stock and sale of the artificial manures and the work has been taken up by the private local distributors, correct data regarding quantities sold are not available. All the same the figures furnished below are with reference to approximate quantities purchased by the ryots in the year. Besides 12,227½ bags of Ammonium Sulphate and 3,462½ bags (2 cwts. each) of Supers (both

concentrated and ordinary) are reported to have been sold to ryots in the Mandya Range both by the Mysore Sugar Company Ltd., and other private agencies

Particulars	Mysore		Bangalore		Total for 1934-35
	1933-34	1934-35	1933-34	1934-35	
Ammonium Sulphate	276	162	400	135	297
Supers	140	19 tons	230	323	342
Ammophos	..	..	75	15	15
Bone Meal	..	..	10	11	11
Nicifos	4	4 tons	..	..	4 tons
Nitrate of Soda	..	..	..	30	30
Dried Blood	..	..	..	12	12
Calcium Cyanamide	..	..	..	4	4
Sulphate of Potash	..	..	40	26	26
Muriate of Potash	..	..	..	10	10
Mixture	..	..	..	100	100

CROPS.

(a) *Ragi*.—H. 22 Ragi has impressed the ryots very well in view of its heavy yield and draught resisting quality when compared with the local variety. There is a growing demand for this variety year by year. During the year under report, it is estimated that about 21,237 seers were distributed in the circle. A and B Farms were continued as before, as also demonstration plots in local areas which in addition were used as supply Depots of pure seed. This means that the seed is not only acclimatised in a way but we can also draw our supply easily from places near to one another thereby saving the time and cost of transport.

Groundnut.—Among improved varieties, H.G. I groundnut continued to be distributed for trial. The total quantity of seed issued in both the districts during the year was 45 pallas as against 25 pallas and 74 seers during the previous year. This variety has been very much liked by the ryots on account of its erect growth and higher yield.

Cotton.—There is more area under cotton in the Mysore District where there is black cotton soil, than in the Bangalore District. Cambodia, Nadam, Nadam like, M.A. IV., M.A. II., and Gadag No. I, cotton varieties are grown on a large scale in Nanjangud and T.-Narasipur Taluks. About 155 lbs. of seeds of these varieties have been distributed by the Mysore, T.-Narsipur and Chamrajnagar Ranges.

(b) *Sugar-cane*.—H.M. 320 and H.M. 544 varieties, more particularly the former are becoming very popular and are being introduced in almost every cane growing area of importance in place of local varieties, the ryots having recognised the higher yields of these improved varieties. Apart from these, other new varieties such as H.M. 500, H.M. 553, H.M. 600, H.M. 602, H.M. 607, H.M. 606, J. 33, A., P.O.J. 2878 and Babbur striped, etc., are also being encouraged in Nagamangala, Mysore and T.-Narsipur Ranges. About 3,77,873 setts of H.M. 320 have been distributed in the Channapattana, Mysore, and Nagamangala Ranges and an area of about 360 acres is reported to have been planted with this variety in the Bangalore and Hunsur Ranges. In the Irwin Canal tract of Mandya, the Mysore Sugar Company have distributed this variety to the extent of about 3,48,52,910 setts. Under the scheme of advances for seeds and manures and cash of the Mysore Sugar Company Ltd., this crop has received a decided impetus and the fascination of the ryots in the area is to grow and get more sugar-cane, as they have undoubtedly realised that it is a paying money crop. However, the cultivators seem to hold the view that the cultivation of this crop has received a slight set back owing to the reduction of the cost from Rs. 12 to Rs. 10 per ton. Nevertheless, the number of cane growers is on the increase and signs are not wanting to show that the Mandya area will eventually become the leading sugar-cane area of the Province.

(c) Special attempts were made in the Irwin Canal area to introduce short season crops in the sugar-cane blocks of the irrigated tract, viz., H.G. I Groundnut, Irrigated Ragi and Summer Chillies.

(d) *Marshy Lands in the Irwin Canal Area*.—One of the important items of work in the Mandya Range for the period under report was inspection of marshy lands under

the block system. There are lands which after the advent of irrigation, have become or tend to become marshy owing to their low situation or other causes. These, when applied for, have to be inspected and the report sent to two different Departments, Revenue and Engineering, for taking further action in the matter. Accordingly as many as 200 applications were attended to and reported upon during the year.

Paddy.—The distribution of G.E.B. 24 paddy has gone forward as usual. The remarkable feature that has characterised the variety is its universal adaptability to the climate of this circle which has accounted for its rapid extension. Besides it has become a favourite crop in every Nala area of this Division owing to its heavy yield, both in grain as well as in straw, besides being a fine variety. The total quantity distributed during the year is about 50 pallas.

The Special Scheme of Takavi Loan.—The scheme to help growing paddy in the Nala area of the Mysore District was not introduced this year owing to two reasons:— (1) the previous arrears were not collected fully specially in Krishnarajnagar taluk and (2) the Government were not willing to extend this loan of manure to other money crops like sugar-cane, etc.

Tobacco.— This is grown almost all over the Hunsur and Periyapatna Taluks. There is an incentive now for growing the cigar tobacco and the same is being introduced in Hunsur (among 60 raiyats) and Bangalore Taluks.

One thousand add twenty-five Rasabale suckers at a cost of Rs. 75-15-0 from T.-Narsipur Range and 200 seed Cocoanuts from Chamrajnagar Range were supplied during the year.

Work through Co-operative Societies and Village Panchayets.— A larger number of societies than shown here could not be supplied with implements and seeds for want of systematic and joint touring of the Agricultural Inspectors and Inspectors of Co-operative Societies. The distribution statement furnished below shows the number of societies and the money transactions during the year 1934-35 and year previous to it.

Name of District	No. of Societies 1934-35	Amount	No. of Societies 1933-34	Amount
		Rs.		Rs.
Mysore	2	354	4	134
Bangalore	2	17	11	234
Total	4	371	15	368

One Madurai Mill of 1932 model for Rs. 195 was sold to Sri Narayana Sawmi Co-operative Society, Chamrajnagar and implements and spare parts worth Rs. 158-11-0 belonging to the Credit Co-operative Society, Nanjangud, was got sold by the Agricultural Inspector, T.-Narsipur.

The work through the village panchayets is also not much. Increased assistance and co-operation from the Revenue Department is desirable and it is hoped that our Departmental requisitions will, as before, be complied with in future also.

The abstract of transactions.

Name of District	No. of Village Panchayets 1934-35	Amount	No. of Village Panchayets 1933-34	Amount
		Rs.		Rs.
Mysore District	32	977	24	866
Bangalore District	27	507	55	1,187
Total	59	1,514	89	2,058

Lift Irrigation under Electric Power, etc.- There are about 130 electric pumps and 12 oil engine pumps for lifting water for irrigation purposes.

Avare Pod Borer and other Insect Pest Work.- Remedial demonstrations against Avare pod borer were carried out wherever possible. Spraying against Alternaria disease of Potato was conducted to a very great extent in Hoskote by the Mycological Section of the Department at the request of the ryots. In the Dodballapur Range 27 packets of Copper Sulphate have been sold for preventing Smut against Jola crop; besides 40 lbs. of Hongey Oil Resin Soap and 2 lbs. of Calcium Arsenate have been distributed during the year both for demonstration and sale, necessary advice being given to the ryots regarding these. Bulletins on Borer have been distributed to certain Village Panchayets in the Channapatna Range.

The Agricultural Inspectors and their staff have, as usual, taken part in various conferences, meetings, Village Panchayets and Co-operative Societies Cattle shows and Jattras for propaganda.

During the Ghati Subrahmanyeswara Jatre near Maklidurg, Sree Prasanna Venkataramanaswami Cattle fair at Dodballapur and the Car Festival of Venngopal-swami at Devanhalli, Agricultural Exhibitions were arranged to be held with great success inspite of bad seasonal conditions. Lectures on various topics of Agriculture were given. The use of improved seed drill was demonstrated.

At Channapatna there was an Agricultural Exhibition held in connection with the All-India Mahadevia Conference winning gold and silver medals.

Cultivation Method. As usual seed selection by salt water method, economic transplantation of paddy, wider planting of sugar-cane, roguing of ragi crop and construction of improved manure pits are some of the main improvements advocated with demonstrations. The practice of sowing of green manure crop to be ploughed in for paddy has spread almost all over the Nala tract.

Jaggory boiling experiments and the use of litmus paper were shown only to a small extent for want of adequate grants for the purpose. The District Board subvention has been completely stopped for the last four years which has greatly handicapped the work of demonstrations of all kinds. Constructions of the Improved Hebbal Furnace was undertaken at four places in Chamrajnagar Range and the ryots have very much been convinced of the advantages of saving in fuel and the double pan arrangement. The Agricultural Depots continued to be popular and their total returns during the year was Rs. 14,616 as against Rs. 6,325 during the previous year. There is an appreciable increase under sale of implements, seeds and manures.

In conclusion, the thanks of the Department are due to the help rendered by the officers of the Revenue and Co-operative Departments in furthering our work, viz., sales of seeds, implements and manures, collection of arrears and introduction of improved varieties of cane, paddy, etc.

S. DANIELL,
Assistant Director.

Comparative statement of Implements sold in the Mysore Circle for the years 1934-35 and 1933-34.

Sl. No.	Particulars	Mysore District		Bangalore District		Total	
		1934-35	1933-34	1934-35	1933-34	1934-35	1933-34
1	K.M. Ploughs	1	31	45	71	46	102
2	K.M. Type Ploughs	21	18	14	22	35	40
3	Mysore Ploughs	3	..	..	..	3	..
4	Mysore Type Ploughs	103	10	4	3	107	13
5	Eureka Ploughs	12	25	..	2	12	27
6	K.M. Cultivators	23	42	4	26	27	68
7	Stone Rollers	1	2	..	..	1	2
8	Sugar-cane Mills	7 Mills 5 Pans	..	..	1	7	1
9	Other Spare Parts	795	321	224	286	1,019	607

N.B.—The Mysore Sugar Company, Ltd., Mandya have sold 6 C. I. W. cultivators and 426 Mysore Pattern Ploughs.

REPORT OF THE SHIMOGA CIRCLE FOR THE YEAR 1934-35.

1. *Seasonal Conditions*.—From July to September, the rainfall was very unfavourable, as a result of which, sowings of paddy in Malnad, and Jola, Ragi, Doddahatti, Groundnut and other Mungar crops in Maidan areas were late, and these suffered to a great extent after germination, and in the period of their growth for want of proper rains. The year was favourable for Mungar Jola crop. From September to October the advent of Hasta, Chitta and Swathi rains saved the situation, and facilitated the sowing of Sannahatti and Hingar Jola in the Hingar season. Cotton crop can be said to be about one-fourth of the usual area under it, and the yield was also about four to eight annas. Standing crop of sugar-cane suffered a good deal and further planting of canes was greatly restricted owing to want of water in the majority of the tanks. On the whole, seasonal conditions for Ragi, Cotton, Groundnut and Til were not favourable. Subsequent rains in January facilitated cultivation of dry lands during fall season. I might state that about 50 per cent of dry lands were thus being cultivated. The fall of Bharani rains during May facilitated sowing of all Mungar crops in dry areas. Another feature is that Malnad experienced a very dry spell of weather unknown before and as a consequence, great dearth prevailed for fodder and drinking water.

2. *District Work*.—The District work was continued on the usual lines. Large quantities of different kinds of seeds were introduced, extensive areas were brought under improved sugar-cane and efforts were made for the popularisation of improved implements. List of implements sold is appended, (*Vide* list No. 1).

3. *Popularisation of Improved Implements*.—Demonstrations have been held as usual to the extent funds permitted. In all 178 demonstrations (mostly ploughing) were held as against 111 in the previous year.

4. *Sale of Implements*.—Sale of implements in the Departmental Depot suffered much due to unhealthy competitions of the manufacturers and merchants by the side of the Government sale Depots as well as in the moffusil places. The rates fixed for ploughs and plough parts at Company's depots are comparatively cheaper. It is learnt that in Davangere alone about 200 ploughs and 3,000 shares worth Rs. 8,000 have been sold in the Company's Depots, as against Rs. 5,000, during the last season. Details of sales during the year under report are given in Appendix No. 1.

5. *Sugar-cane Mills*.—During the year under report 15 mills were sold as against 11 in the previous year. Madhure mills are gaining popularity.

6. (a) *Manures*. The District Inspectors continued to explain the advantages of improved manure pits bringing home to the ryots the better methods of collecting and conserving cattle manure keeping in view the Village sanitation as of primary importance. Fifty-six model manure pits were dug in Challakere Range during the year under report.

(b) A total quantity of about 900 seers of sunnhemp seed was distributed to be sown for green manuring purposes during the year under report in all the Ranges for raising paddy crops except in Challakere, Shikaripur and Thirthahalli Ranges.

(c) *Oil Cake*.—A statement showing the distribution of Oilcake in the Circle is appended (*Vide* appendix 2 attached). Artificial manures are being largely used by the ryots as they have begun to realise the advantages of the same now a days. Some 36,700 lbs. of A. P. special fertiliser were sold in Davangere Range by Messrs. Indo-Agri. Ltd., at a cost of Rs. 2,635-13-0 in addition to the distribution of manures worth Rs. 7,653 and Rs. 443-14-4 by the Imperial Chemical Industries Company and through the Department, respectively. Apart from the use of the above for paddy, sugar-cane and areca, it is also being used for dry crops in Chitaldrug District. The department do not generally undertake to stock and sell the stuff now a days as the companies have their agencies in most of the District headquarters from which the supply will be drawn to moffusils as occasion arises.

7. *Crops*.—*Sugar-cane*.—Improved varieties of sugar-cane such as H.M. 320, 544, 553, 602 and 606 are almost replacing the local ones. The total number of different

varieties of cane setts distributed is shown in Appendix No. 3 ; 9,91,166 setts were distributed both through the department and inter-distribution. H.M. 320 has completely replaced the local variety under Honnur Tank in Davangere Range. In all there are more than four lakhs of setts of improved varieties planted in this Range. Here H.M. 320 survived for two months without irrigation, where Rastale had completely died. A statement showing the manurial experiments conducted in the fields of Mr. Sivappa Gowda of Kalpanahally under Honnur tank on H.M. 320 is appended. (*Vide* Appendix 6).

In Shikarपुर Range 31,000 setts of H.M. 320 were distributed through the Department and the variety is thriving very well. People in these parts appreciate this variety immensely and there may be greater demand during the next season. In Colemanpet, the Colonists have grown extensive areas under H.M. 320 and the total area of the standing crop of this variety is about 70 acres. Besides, in other places of Shimoga Taluk and in the Nala area near Bhadravati about 100 acres are now under this variety. In Channagiri taluk, mostly under Sulekere tank, H.M. 320 has been introduced and setts to the extent of 1,30,000 were distributed during the year. The total area under this improved variety in Channagiri is about 100 acres.

Paddy.—G.E.B. 24 paddy has been spreading as usual in the Circle. S. 246, S. 139, Halubbalu S. 328, Banku, C. 55, C. 1, Chambe and Basumati are the other varieties tried. A statement showing the distribution of these varieties by ranges is appended. (*Vide* Appendix 4).

In all 8,025½ seers were distributed under these new varieties during the year under report. G.E.B. 24 has proved to be a valuable rainy season crop. Seed Farms of this were maintained in the villages of Adivala, Alur and Hosakere in Hiriyur Range getting seed from Nagenahalli Farm.

Ragi.—Ragi varieties introduced in the Circle are H. 22 and K. 1. Distribution by ranges and the quantity distributed are as in Appendix 5. A total quantity of 911 seers were distributed in all.

Groundnut.—Area under this improved variety in Davangere is being diminished year by year and the reason may be attributed to fall in prices.

In Challakere Range Spanish variety was tried on dry lands and the area under this variety has been extending year after year. Another improved variety, *viz.*, Valencia which is a short season one was also tried as a summer crop on wet lands of Dodderi village. Spanish, H.G. 1 and Valencia varieties were tried on a small scale side by side in a test and the comparative results are noted as hereunder :—

Variety						Area of plot	Total yield
Plot 1.	Spanish	..	..	..	..	50 Guntas	25 Mds.
	Valencia	..	..	..	..	30 "	15 "
Plot 2.	Spanish	..	..	..	..	40 "	18 "
	H.G. 1	..	..	..	..	20 "	8 "

Cotton.—The work on cotton related mainly to the extension of area under Selection 69 which is becoming more popular. In all 7,458 mds. of Selection 69 cotton seeds were distributed during the year under report as against 3,189 mds. in the previous year. Doddahatti had an attack of red leaf blight in Davangere Range. In Holalkere Range cotton crop suffered owing to heavy rains after sowing. Selection 69 was rogued and the kappas ginned under departmental supervision to avoid mixtures. Experiments were conducted with H. 190 and Selection 69. H. 190 is seen to be of superior type to selection 69. Maradihalli, Medikerenayakankote and Doddasiddavanahalli Societies have already taken up the work of Selection 69 cotton sale and its improvement.

Jayavant cotton was tried in two places in Davangere Range on a small scale. At Neralagi it has given 10 mds. of kappas per acre. This deserves introduction in wilt affected areas as it resists wilt.

Jola.—Owing to the cessation of timely rains in the State, fodder scarcity was keenly felt and, in fact, famine was feared. Then the Government kindly ordered the purchase of Bili jola seeds, as that was the only fodder crop that could be expected without much water facility and in a minimum time. For this purpose "Jola campaign" was started in Chitaldrug centre and 1,361 pallas of seed were purchased at a cost of

Rs. 17,396 and distributed mostly outside the Division. Though it was a job to get good stuff for seed purposes no stone was left unturned and even telegraphic demands were complied with as early as practicable, making arrangements with the Railway authorities for wagon facilities and to book the stuff at one-fourth parcel rates.

MISCELLANEOUS CROPS.

White Til.—Only small quantity of seed was obtained from Madras Presidency for trial, and the seeds were distributed in Chitaldrug, Davangere, Shimoga and Holalkere Ranges. The crop failed in all places due to adverse seasonal conditions. However the variety will be tried during the next season and the result watched.

Pepper Cuttings and Layerings.—The work of introducing Pepper varieties was continued. The increased demand for the Malabar Pepper vines both within and outside the State every year goes to prove the value of this improved variety. Marthur Farm will not be able to meet the increasing demands and some times the ryots will have to get back disappointed. During the year under report 50 vines were distributed in Thirthahally Range, 12 in Chitaldrug and 167 in Holalkere in addition to outside supply.

Robusta Coffee.—People in Malnad parts have been taking to Coffee cultivation. 10½ seers of seeds were distributed in Sagar Range and seedlings raised out of it are thriving fairly well.

8. *Control of insect pest and fungoid disease.*—Whenever damage to crops was reported by insect pests and diseases such places were inspected and remedies suggested. In doubtful cases the questions were referred to the Entomological and Mycological sections with diseased samples and advice sought and intimated. All the depots are provided with Sprayers so that the Agricultural Inspectors may attend to urgent calls and give assistance.

Treatment of Smut on Jola.—Coppersulphate treatment against smut on Jola was continued to be adopted and (1,125) packets were sold during the year under report. In the recent Jola campaign during the year under report regular propaganda was done in this connection and the ryots were advised to steep Jola before sowing.

9. *Silage.*—Owing to unfavourable seasonal conditions much fodder crop could not be had for making ensilage. As a consequence of this, silage was done in only two places in Davangere Range.

10. *Areca Driers.*—The method of drying arecanuts by means of time-honoured “ ಹೊಗೆತಟ್ಟು ” (smoke drier) is being rapidly displaced for the reason that the garden owners have realised the all-sided advantages of the improved areca driers. People are coming forward for them and the sale of areca drier materials is on the increase though the cost is a bit excessive. As a result of this two driers were constructed this year, one at Nanditale and another at Bedur in Sagar Taluk. The four driers constructed at Thirthahalli continued to do good work and the one at Agumbe was very useful in view of the very heavy rainfall of the place.

11. *Work in Conjunction with Village Panchayets and Co-operative Societies.*—The work through Co-operative Societies and Village Panchayets continued as usual with varying success. A statement showing the work done through these institutions is enclosed. (*Vide* Appendix 7). Many of the Societies and Village Panchayets own sugar-cane mills and other improved implements and these are being hired out in season and they have earned a sum of Rs. 155-4-0 in the shape of hire. Jaggory boiling-outfit has been recognised to be particularly remunerative. Though, as usual, the work of inducing Societies to take up Agricultural work by stocking implements, etc., for sale was done systematically much appreciable work was not turned out owing to the poor financial condition of certain societies.

12. *Co-operative Sale of Cotton through Co-operative Societies.*—Maradihalli Co-operative Society had stocked 630 mds. of Selection 69 cotton seeds for distribution. No loan was obtained from the Apex Bank this year owing to the failure of cotton crop. Medikerenayakankote Co-operative Society also purchased 409½ mds. of Selection 69 seed and sales were not vigorous owing to unfavourable seasonal conditions.

13. *District Boards.*—During the year, the Shimoga and Chitaldrug District Boards were generous enough to sanction Rs. 200 and Rs. 150, respectively, for Agricultural work and this sum was spent in the Districts concerned as detailed below :

- (1) Introduction of new varieties of paddy and sugar-cane, etc.
- (2) Construction of Areca driers.

- (3) Introduction of Elephant Yams, etc.
- (4) Mass selection of seeds.
- (5) Supply of fruit plants to encourage fruit gardening.
- (6) Introduction of Pine-apple varieties.

14. *Meetings and Jatras Attended.*—The District staff has as usual attended the meetings, Jatras and Conferences for purposes of propaganda work and in addition to demonstrations conducted, lectures were delivered on improved Agriculture at the meetings.

15. *Agricultural Depots.*—All the Depots of the Circle continued to be popular and have served useful purpose in helping the ryot population. The details of transaction are found in Appendix 8. The total number of visitors to depots is 4,977.

16. *Mass Selection of Earheads.*—To obtain well developed and prolific seeds for improving future yields, the method of mass selection of earheads on the standing crops was carried out in several villages with fair success. It was done largely in the case of jola. Details of quantities thus collected are as follows:—

Serial No.	Name of Range	Jola in seers	Ragi in seers
1	Holalkere	1,665	120
2	Davangere	381	nil
3	Chitaldrug	3,550	102

17. *Schools where Agricultural Instruction is imparted.*—These were inspected and necessary advice was given in regard to the proper way of conducting experiments. The following are the institutions in the Circle where Agricultural farms are maintained.

1. Shiomga Range Kumsi.
2. Davangere Range Malebennur.
3. Thirthahally Range Town.

18. *Other Works.—Poultry Farming.*—1. A pair of Leghorns was supplied to Gajanur Village Panchayet in Shimoga Range and the performance of these was satisfactory. People are realising the importance of this kind of industry and demand for Leghorns is increasing. There have been about 50 fowls of this breed in this village which have been further distributed to other places.

19. *Garden Cultivation under Vani Vilas Sagar.*—2. Government have generously sanctioned Rs. 5,000 (as Takavi loan) for garden cultivation under Vani Vilasa Sagar and also to encourage fruit gardens. The total number of applications received is 46, the number recommended being 36. A sum of Rs. 3,127-8-0 was sanctioned as a loan.

20. *Subscriptions to Union Journals.*—In Davangere 15 Village Panchayets were enrolled as members to the Kannada Journal of the Agricultural and Experimental Union and in Holalkere the number of Village Panchayets enrolled is eight.

Conclusion.—Thanks are due to the District Boards of Shimoga and Chitaldrug, Village Panchayets, Co-operative Societies, and Revenue authorities for their kind co-operation in furthering the cause of scientific agriculture.

S. H. BENNUR,
Assistant Director.

APPENDIX I.

Statement showing the sale of Implements in Shimoga Circle during the year 1934-35.

Particulars	Shimoga	Sagar	Thirthahalli	Shikarpur	Chitaldrug	Challakere	Holalkere	Davangere	Hiriyur	Total
1. K.M. Ploughs	..	..	2	..	..	..	..	..	1	3
2. Cultivator	2	..	..	..	..	..	2	1	..	5
3. Kirlosker Ploughs	..	..	2	1	3	..	8	1	2	17
4. Eureka Ploughs	11	..	3	..	..	..	3	..	..	17
5. Meston Ploughs	..	12	..	..	..	..	..	..	..	12
6. Gardener Ploughs	10	..	..	..	..	..	..	..	..	10
7. Mysore Ploughs	..	..	..	..	..	..	1	..	1	2
8. Mysore Pattern Ploughs	..	..	..	..	..	..	2	..	..	2
9. K.M. Pattern Ploughs	9	..	10	..	..	..	..	..	..	19
10. Shares and other spares	292	30	194	68	54	175	201	7	123	1,144
11. Sugar-cane Mills	12	..	1	..	..	..	..	2	..	15
12. Bahadur No. 1 Plow	..	..	..	..	..	5	..	..	..	5
13. Areca drier pipings	..	4	..	..	..	..	..	..	..	4
		Setts.								Setts.

APPENDIX II.

Statement showing the sale of Manures in the Shimoga Circle during the year 1934-35.

Sl. No.	Name of Ranges	Ammonium Sulphate	Supers	Sulphate of Potash	Ammonophos	Nielphos	Paddy Fertiliser	Groundnut cake	Bone meal
		Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
1	Shimoga	30,080	1,792	..	..	720	..	..	..
2	Sagar	1,828½	1,719½	350	..	..	..	..	..
3	Thirthahalli	11,536	1,191	191	..	..	..	..	286
4	Shikarpur	1,840	1,764	..	..	..	..	..	..
5	Chitaldrug	267½	576½	..	..	..	..	..	210
6	Davangere	60,560	..	..	2,000	26,240	28,400	3,960	..
7	Hiriyur	1,893	3,763	16	..	..	..	..	..
	Total	1,08,005½	10,806	557	2,000	26,960	28,400	3,960	496

APPENDIX III.

Statement showing the distribution of Sugar-cane Setts in Shimoga Circle during the year 1934-35.

Serial No.	Name of Range	Variety	No. of setts	Total
1	Shimoga	H.M. 320	1,57,750	2,00,750
		H.M. 544	42,000	
		Babboor Stripe	1,000	
2	Sagar	H.M. 320	58,000	58,000
3	Thirthahalli	H.M. 544	..	2,500
		H.M. 320	2,500	
4	Shikarpur	H.M. 544	10,000	64,000
		H.M. 553	22,000	
		H.M. 320	31,000	
5	Chitaldrug	H.M. 320	1,000	3,333
6	Challakere	H.M. 553	2,333	25,000
		H.M. 553	22,510	
7	Holalkere	H.M. 320	2,490	16,000
		Rastale	..	
		Pattapatti	16,000	
8	Davangere	H.M. 602	..	4,00,000
		H.M. 320	4,00,000	
		H.M. 553	1,12,083	
9	Hiriyur	H.M. 320	6,000	2,21,583
		H.M. 602	98,500	
		Babboor Stripe	4,000	
		H.M. 606	1,000	
	Total .. .. .	.....	9,91,166	9,91,166

Shimoga Circle.

APPENDIX IV.

Statement showing the distribution of Paddy varieties in Shimoga Circle during the year 1934-35.

Serial No.	Name of Range	Variety	Quantity in Seers	Total in Seers
1	Shimoga	G.E.B. 24 S. 246 S. 139 Halubbalu	300 } 10 } 70 } 100 }	480
2	Sagar	G.E.B. 24 S. 139 S. 246	2,947 } 100 } 100 }	3,147
3	Shikarpur	S. 328 G.E.B. 24 Banku	250 } 800 } 200 }	1,250
4	Chitaldrug	Tiruganhallisanna	5	5
5	Challakere	Bangarathige S. 246 C. 55 C. 1 G.E.B. 24 Chambe Chintamanisanna Amritsar	398½ } 5 } 5 } 5 } 300 } 10 } 25 } 45 }	793½
6	Davangere	G.E.B. 24	100	100
7	Hiriyur	G.E.B. 24 Basurathi	2,200 } 50 }	2,250
	Total ..	.....	.....	8,025½

APPENDIX V.

Statement showing the distribution of Ragi varieties in the Shimoga Circle during the year 1934-35.

Serial No.	Name of Range	Variety	Quantity in seers	Total in seers
1	Shimoga	H. 22 K. 1	267 } 89 }	356
2	Chitaldrug	H. 22	60	60
3	Holalkere	H. 22 K. 2	276 }	276
4	Davangere	H. 22	200	200
5	Hiriyur	K. 1 K. 2 H.K. 13 H. 22	5 } 5 } 5 } 4 }	19
	Total ..	.....	911	911

Shimoga Circle.

APPENDIX VI.

Manurial experiments on sugar-cane conducted in the fields of Mr. Gowda Shivappa of Kalpanahalli under Honnur Tank in Davangere.

(Variety H.M. 320).

Details of experiments are as follows :—

Experiment Number	Particulars	Yield of cane for three guntas	Calculated yield per acre
		Lbs.	Tons. Mds.
1	Check plots that have received cattle manure at the rate of 50 cartloads per acre	4,280	26 59½
2	Plots that have received 600 lbs. of Ammonium Sulphate, 320 lbs. of Supers and 60 Mds. of Groundnut Oilcake per acre	6,414	40 7
3	Plots that have received 340 lbs. of Ammonium Sulphate, 320 lbs. of Supers and 80 Mds. of Groundnut Oilcake per acre	6,210	38 6½
4	Plots that have received 600 lbs. of Ammonium Sulphate, 320 lbs. of Super and 40 Mds. of Groundnut Oilcake.	6,157	38 38½

Note.—Cattle manure was being applied uniformly to all the plots.

APPENDIX VII.

Statement showing the work done through Co-operative Societies and Village Panchayets during the year 1934-35.

Serial No.	Name of Range	Co-operative Societies		Village Panchayets	
		No.	Amount transacted	No.	Amount transacted
			Rs. a. p.		Rs. a. p.
1	Shimoga	4	628 6 10	1	56 15 10
2	Sagar	2	106 4 0	4	46 10 0
3	Thirthahalli .. .. .	..	.....	1	12 0 0
4	Shikarpur .. .. .	..	.....	1	4 8 0
5	Chitaldrug	10	980 4 5	5	228 12 0
6	Challakere	1	118 2 0	5	210 3 0
7	Holalkere .. .. .	..	.....	7	129 0 0
8	Davangere .. .. .	..	.....	21	155 4 8
9	Hiriyur	3	415 5 0	..	.....
	Total ..	20	2,248 6 3	45	843 5 6

APPENDIX VIII.

Statement showing the transactions under Implements and Seeds and Manures in Shimoga Circle during the year 1934-35.

Serial No.	Name of Range	Implements	Seeds and Manures	Remarks
		Rs. a. p.	Rs. a. p.	
1	Shimoga	2,581 13 0	338 6 9	
2	Sagar	199 11 0	334 10 3	
3	Thirthahalli	689 0 0	269 0 10	
4	Shikarpur	142 14 0	325 12 6	
5	Chitaldrug	183 10 0	1,668 11 3	
6	Challakere	461 2 6	772 9 3	
7	Holalkere	567 1 6	237 14 8	
8	Davangere	420 2 0	443 14 4	
9	Hiriyur	677 8 0	4,043 3 0	
	Total ..	5,922 14 0	8,434 2 10	

Note.—Sales through private negotiations (approximately).

		Rs. a. p.
Implements	..	10,000 0 0
Chemical manures	..	10,700 0 0
Total	..	20,700 0 0

Shimoga Circle.

REPORT OF THE CHIKMAGALUR CIRCLE FOR THE YEAR 1934-35.

Seasonal Conditions.—The rainfall was much indifferent during the year. Both mungar and hingar rains were unfavourable to field crops. Even in malnad parts rains were below normal. However, coffee has not suffered to any great extent. Blossom showers were timely and good. Owing to shortage of rains from October onwards and continued drought, cardamom estates suffered to some extent. In parts of Hassan, Hole-Narasipur, Arsikere and Kadur, the mungar field crops suffered very badly and in a few instances, the crops were a complete failure. Tanks were partly or fully dry in many places and hence tank fed paddy also suffered to some extent. Channel areas fared better. Fodder scarcity was acute in a few places and cattle were removed to malnad parts for temporary grazing.

Campaign for growing fodder jola did much to alleviate the situation. Raiyats in many affected parts gladly took up growing of fodder jola and the few showers that fell in October did much to ease the anxiety that was felt for cattle fodder. It was a great success and jola crops were fairly good generally and hence fodder for cattle was assured for the year.

Thus the year was one of scanty rainfall and but for the late rains, the distress would have taken serious proportions.

5. *Market Conditions.*—The trade depression of the previous year continued and there was not much improvement in the market conditions. Coffee, areca-nut and cardamom continued to command the same low prices of last year and paddy and other allied grains showed a slight increase in prices.

6. *Demonstration Work.*—Sixty-six demonstrations of ploughing with improved ploughs, spraying and jaggory boiling were conducted in various centres of this Circle by the staff. (Appendix B.) As has already been stated in the last year's report, much progress in adoption of these up-to-date methods of improved agriculture by the agriculturists could not be expected due to the continued poor returns that the agricultural produce fetched during the year.

7. *Manures.*—In spite of the adverse market conditions for the agricultural products, the application of artificial manures has not in any way decreased. From the figures available so far, it is seen that manures worth about a lakh of rupees have been distributed by the local manure merchants, mostly for application to coffee and cardamom crops and to sugar-cane as well. The amount of coffee fertilisers sold to coffee planters by the coast firms direct is very large and the extent of supplies cannot be gauged even approximately. The district staff are doing their best to popularise the use of artificials and the progress in this direction can only be slow in consideration of the market conditions prevailing.

8. *Distribution of Seeds.*—*Bili Jola.*—Owing to failure of rains from October 1934 onwards and the continued drought conditions, bili jola was recommended to be grown as a fodder crop. A quantity of only 40 pallas of the seed could be obtained in time for distribution in this Circle.

Paddy.—There is a very great demand for the short duration paddies, such as Halubbalu, Chintamani sanna, Kapilesanna, etc., and those suited to malnad tracts also. G.E.B. 24 paddy and Nagpur fine are also gaining in popularity and Basumathi and Bangarakaddi are being introduced. The Agricultural Inspectors have been instructed to collect yield, data, etc., and to advise the raiyats to keep the seeds pure. A quantity of 4,500 seers (approximately) of the improved varieties of these paddies has been distributed through the depots of this Circle.

Kar Ragi.—Two varieties, viz., Bochanahalli 82 and H.K. 13, were introduced in this Circle during the year under report. Small quantities of kar ragi varieties have also been introduced in Saklespur and Arsikere ranges. H.K. 13 being a violet compact and early maturing variety is much appreciated by the ryots of this area and Bochanahalli takes some time more to mature. The interference of rains at harvest time comes in the way of separate stacking and harvest to get the yield results.

H. 22 variety is commanding popularity in the dry ranges of this Circle and a quantity of 400 seers has been distributed from the depots during the year under report.

There is a very great demand for sunnhemp seeds in Hassan District for sowing as a green manure crop and a quantity of 1,000 seers was distributed during the year.

The ryots were also advised to grow commercial crops like potatoes, onions, garlic, chillies, tobacco, etc., and the area under these crops is gradually increasing.

Sugar-cane.—Babbur striped, H.M. 544, and H.M. 320 and local pattapatti are being extensively grown in this Circle. Due to transportation and other difficulties to get the seed in time, only about 2,00,000 setts were supplied to the raiyats through private agencies.

Fruit Plants.—Advice was given to the intending planters, to grow fruit plants such as pine apple, Yemmedoddi varieties of oranges, etc. They were directed to the District Board Nursery, Chikmagalur, for the purchase of these plants. The sales effected by them are furnished herewith.

1. Orange plants	..	..	..	2,001
2. Lime and other citron variety	..	..	..	719
3. Pomogranate plants	..	..	..	205
4. Papai plants	..	..	..	197
5. Peeches	..	..	..	43
6. Rasabale suckers	..	..	..	1,081
7. Pine apple	..	..	..	197
8. Rose apple plant	..	..	..	49
9. Custored apple	..	..	..	41
10. Apple	..	..	..	37
11. Mangò grafts	..	..	..	59
12. Goa (Gova)	..	..	..	51
13. Grape vine plants	..	..	..	7

9. *Future Programme.*—As the several agricultural methods which are being adopted by the raiyats have sufficiently been popularised, it is necessary to change the programme. The matter is under contemplation and till it is definitely settled, the items of work pursued hitherto will be continued with the following addition :—

Development of Bee-Keeping as a subsidiary industry.

10. *Sales.*—Implements worth about Rs. 1,730 and sprayers and chemicals worth about Rs. 54,000 were sold during the year as compared to Rs. 1,000 and Rs. 49,000 respectively during last year. (Appendix A.) The sales of agricultural implements are not as encouraging as they ought to be. The reasons for these low sales may be put down as due to the poor returns that the agriculturists got for their products. In spite of the low rates prevailing in the coffee, cardamom and areca markets, the consumption of spraying materials has not in any way decreased. This shows that not only spraying work has been popular among the planters but also it has become a necessity.

11. *Co-operative Extension Work.*—Three co-operative societies in the Arsikere Taluk took part in the distribution of improved varieties of seeds. Two in Manjarabad Taluk have come forward to co-operate with the Department in stocking the improved seeds, implements and manures for sale amongst their members. Seven others in Koppa range have taken up work of stocking and sale of sprayers and chemicals, improved implements and seeds. (Appendix B.) The poor financial condition of the societies in general has been responsible for the want of adequate progress in this direction.

12. *Development Work through District Boards.*—The District Board, Kadur, contributed a sum of Rs. 500 during the year. Out of this, a sum of Rs. 200 is set apart towards the cost of bulls to be supplied to village panchayets of this District. The remaining sum of Rs. 300 was utilised for free distribution of seeds, manures and implements to village panchayets and enthusiastic agriculturists. There was no contribution from the Hassan District Board, during the year and hence even though one village panchayet (Ummathur V.P.) was willing to go in for a bull and contributed their quota of Rs. 100 during last year, the amount had to be refunded to the village panchayet and the question of supply of the bull dropped.

13. *Bee-keeping Work.*—Two fieldmen of the Circle and one grafter of the Coffee Station were deputed for training in this line of work at the Entomological Section, Bangalore, during the year. Attempts are being made to advocate the undertaking

of this line of work. Success achieved so far is very encouraging and hence the work will be vigorously pursued during the current year.

14. *Spraying against Areca and Coffee.*—Owing to continued drought it is feared that the attack of borer and green-bug on coffee will be very severe in estates in Belur and Saklespur area. In spite of this, the year under report may be said to be satisfactory in that no wide-spread attack of leaf disease and die-back are reported. It is gratifying to report that in spite of adverse market conditions, spraying has become popular and according to information so far collected, an area of over 25,000 acres of coffee and 1,500 acres of areca is seen to have come under spraying in this Circle.

15. *Local Manufacture of Spraying Pump.*—The question of getting coffee sprayers manufactured locally and through the Central Industrial Workshop was taken up. The Central Industrial Workshop manufactured a D.S.P. pattern pump which was tested on the Farm and found to be satisfactory.

Messrs. B. M. Works of Chikmagalur were the first to take up the work at my suggestion. The firm was furnished with all information and instructions and also a sprayer was lent for a model. It is very gratifying to state that the firm took up to manufacturing the pump with zeal and earnestness and as a result put on the market D.S.P. pattern pumps which seem to be as good and efficient as those of imported ones. At present the firm has sold over 60 pumps each costing Rs. 300 (average).

The Hassan Engineering Works was advised to take up manufacturing of a smaller pump of a different design.

The Vermoral Headland pump belonging to the Coffee Experiment Station was given to them for a model and also suggestions were given for material alterations in the construction and the capacity. The new pump is an improvement over the foreign one in that the latter has a gland nut packing arrangement with gun metal plungers in place of leather buckets type of plungers. No doubt this sprayer is a suitable one for smaller planters but unfortunately, the manufacturer of the pump leaves much to be desired in its construction, casting and material used. Therefore the Department is not advocating these although planters are buying them on their own responsibility. This firm has sold over 20 pumps up to the present. The cost of this type of pump is rated at Rs. 100 without hoses.

16. *Technical Advice.*—Several enquiries regarding coffee cultivation, manuring disease problems and seed indents were received both from inside and outside the State and the requirements were promptly attended to.

17. *Correspondence.*—

					<i>From.</i>	<i>To.</i>
1932-33	..	..	..	..	4,098	3,944
1933-34	..	..	..	..	5,618	4,675
1934-35	..	..	..	..	7,349	5,545

A perusal of the above statement will reveal that the work of the Circle has considerably increased. Though one clerk was transferred from Shimoga Circle due to addition of three more ranges as per Government Order No. D. 104-152 A. & E. 261-33-2, dated Bangalore 7th July 1934, still it has been very difficult to cope up with the increasing volume of work, more especially with regard to the accounts relating to transactions under spraying materials which require immediate and prompt attention. Representations are being repeatedly made for an additional hand in this regard, but the proposals have not as yet received the favourable consideration of Government. It is however hoped that it will receive due consideration at least this year.

K. H. SRINIVASAN,
Senior Assistant Director.

APPENDIX A.

Statement of sales of implements, seeds, manures, sprayers and chemicals in the ranges of Chikmagalur Circle.

Name of Range				Sprayers and Chemicals	Implements	Seeds and manures	Total
				Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
1.	Chikmagalur	..	..	28,093 5 2	20 12 0	112 14 1	28,226 15 3
2.	Saklespur	..	..	18,410 13 6	150 1 0	97 0 0	18,657 14 6
3.	Tarikere	..	..	1,423 12 1	107 10 6	1,135 4 9	2,666 11 4
4.	Koppa	..	..	6,206 11 6	357 6 6	220 5 3	6,784 11 3
5.	Arsikere	..	..	....	168 3 3	439 3 2	607 6 5
6.	Hassan	..	..	....	796 12 0	325 2 3	1,121 14 3
7.	Hole-Narasipur	..	..	....	127 1 0	241 7 5	368 8 5
Total				54,134 10 3	1,727 14 3	2,571 8 11	58,434 1 5

APPENDIX B.

Statement showing demonstrations held and Village Panchayets and Co-operative Societies taking Agricultural Development Work in the Ranges of Chikmagalur Circle.

Name of Range				Ploughing demonstration	Jaggery boiling and cane-crushing	Spraying	Transplantation of single seedlings of paddy	Village Panchayets and Co-operative Societies doing agricultural work	
								Co-operative Societies	Village Panchayets
1.	Koppa	..	..	10	13	2	..	7	11
2.	Hole-Narasipur	..	..	12	2	..	..	..	2
3.	Saklespur	..	..	8	10	..	3 places	2	..
4.	Hassan	..	..	6	..	..	..	..	51
5.	Tarikere	..	..	..	..	..	..	2	19
6.	Arsikere	..	..	..	..	..	..	4	7

REPORT OF THE TUMKUR CIRCLE FOR THE YEAR 1934-35.

Seasonal Conditions.—The year under report had to face very adverse seasonal conditions. There were a few showers in some places in the beginning allowing of cultural operations. But at sowing times very little or no rain fell in places where ploughing had been done, so much so that a few villages which took the risk of sowing lost the seed partly and the germinated portion withered away finally due to irregular and scanty rainfall. In some taluks as a whole, there were practically no sign of clouds collecting and distress started. There was great difficulty to procure fodder for cattle and water for both men and animals. Arrangements had consequently to be made to stock jola seed in advance, to enable its sowing as soon as rains came.

The following quantities of Bili-jola were distributed through the departmental depots.

Tumkur Range	174 pallas.
Tiptur Range	74 „
Madhugiri Range	210 „
Kolar Range	200 „
Chickballapur Range	167 „
Chintamani Range	70 „
Goribidnur Range	87 „
Total	982 pallas.

Apart from the above quantity, nearly 300 pallas of the seed is reported to have been distributed through private agencies in Tiptur Range alone and much more in other Ranges.

Fortunately in most of the taluks later rains fell in isolated places partly heavily and partly sparsely. Jola was immediately arranged to be sown and the Range staff particularly made the ryots to understand that they would get food and fodder if this was sown in wet and garden lands. This was gladly done by the ryots. In garden and wet areas, jola crop came up excellently well reaching to a height of about eight to nine feet and gave bumper crops and thus saved the situation. In addition, the ryots got large quantities of grain enough to tide over the year. In some places, fodder and grain from Bili-jola grown in excess was actually sold away to the neighbouring villages or sometimes bartered for ragi and condiments. Bili-jola campaign on the whole proved a great success and helped in considerable measure to tide over the situation. In dry lands where some ventured to sow jola, either the crop withered away or small harvests were got. Scarcity for fodder during the period was partly met from the reserve stock which some villages had and partly from leaves of trees. Advice was given to the ryots to sell away the surplus and useless stock of animals which was mostly responded to in some taluks of Kolar District.

Hay depots were caused to be started in several places with the help of the Forest and Revenue authorities for sale to the needy. In Tumkur District, forest grass was cut and dried at Bukkapatna Forest and transhipped to Madhugiri and Pavagada and was kept in charge of the Taluk Amildars. In the Kolar District, hay was likewise stocked at Chickballapur and other places. Cotton seed was procured for feed of cattle and was stocked in all the depots for sale. Thus all possible help was rendered to the ryots of the affected parts to tide over the distress situation.

Demonstration of Implements.—Demonstration of improved implements with a view to popularise their use was continued. One hundred and eighty-six demonstrations were held during the year as against 297 of the previous year. Table I reveals the different kinds of demonstrations held in all the ranges during the year with comparative figures for the previous two years.

Sale of Implements.—Due to the continued economic depression and adverse seasonal conditions sale of implements during the year has been anything but encouraging.

Table II gives the number of implements sold during the year as compared with the sales of the previous two years.

Sugar-cane Mills.—Sugar-cane mills manufactured by Messrs. Madhurai Mudaliar and Sons of Bangalore, have continued to be very popular and the cane growers have begun to get the mills direct from the firm even without the assistance of the department. Pretty large number of them are learnt to have been bought for use by ryots. Seven mills were sold in the Tumkur District and one in the Kolar District during the year.

Mhote Wheels.—The ryots who own Kapile wells are advised to replace the wooden wheels with the improved "Roll Easy" wheels manufactured by Messrs. Kirloskar Brothers. But the prohibitive cost of the wheels is a great obstacle in the way of our ordinary poor ryot going in for it.

Pumping Plants.—Installations of small electric plants for pumping up water for irrigation are gradually gaining popularity and ryots have begun to use electric power for irrigating their lands. In Tumkur Taluk alone there are 15 such installations. In the Kolar District seven Electric Pumping installations were installed during 1934-35, in addition to the 64 installations already introduced during the previous years.

Cultivation Methods.—Forty-three demonstrations were held during the year to demonstrate various improved ways of cultivation, such as economic transplantation of paddy seedlings, mass selection of earheads for seed purposes, selection of seeds by salt water method, wider planting of sugar-cane, etc. All these methods gave very satisfactory results and the ryots are well convinced of the advantages of these improved methods and they are gradually taking them up.

Jaggory Boiling on Improved Lines.—Twenty Begasse furnaces for jaggory boiling were constructed, in Kunigal Taluk alone, where there was very great demand from the cane growers for constructing the new model furnace, which is becoming increasingly popular. In all 66 demonstrations were held to demonstrate to the ryots the improved method of jaggory boiling and the use of the skimming ladles. About half a dozen sets of furnace materials are already being bought and stocked by private people for use in the coming year.

Manures.—Preservation of cattle manure in pits having roofing over is gaining popularity as being decidedly superior to heaping of manures in open in a number of places. Owing to lack of funds no new pit was dug during the year under report. Those that were dug during the previous years are being used by people in the localities.

Sunhemp as green manure for cocoanut is becoming increasingly popular. Two hundred and fourteen seers of seed were sold in Tiptur Range alone. Beneficial effects of the application of green manure to crops in general is being realised by cultivators and its application is spreading every where.

Hongey leaves are universally used for green manuring of paddy.

Use of artificial manures is becoming more and more familiar and popular for all crops. But as they are not stocked in our depots, arrangements were made for the supply through the firms, whenever clients applied for it. Besides, ryots buy the stuff direct from a few sale depots arranged by distributors of Indian Chemical Industries, Ltd. Messrs. Parry & Co., have put on the market special mixtures for various crops. As many as 1,500 bags of N.T.D. and Kunigal Special N.T.D. were sold in Kunigal Taluk alone. It is learnt that an equal number of bags of Annumonium Sulphate also were likewise sold in the same Taluk.

CROPS.

Ragi.—Supervision and expansion of 'A' and 'B' Farms for multiplication of H. 22 ragi was continued. Twenty two 'A' Farms and 6 'B' Farms were opened during the year and 142 pallas of H. 22 ragi supplied to them. Unfortunately due to adverse seasonal conditions most of them either failed or produced very small quantities.

Results of ragi varietal experiment conducted on the lands of the Methodist Mission Orphanage, Tumkur Town, near the Railway Station, given below, go to show that the best yield is given by H. 22 ragi.

	Variety	Actual yield		Yield per acre	Per cent yield
Local	.. ..	62	Seers	437 Seers	100
H. 22	.. ..	72	"	508 "	115.9
H. 45	.. ..	56	"	395 "	90.16
H. 2	.. ..	51	"	360 "	82.11
	Area of each plot	..	..	..	5½ guntas.
	Date of sowing	..	..	..	1st August 1934.
	Date of harvesting	..	..	..	9th December 1934.

It is gratifying to note that H. 22 ragi is now grown on a very large scale every where and is rapidly replacing the local varieties.

Groundnut.—During the year under report 368 seers, mostly of H.G. 1 variety, were distributed, others were Spanish and Valencia. They are slowly spreading as they are believed to be liable to be easily stolen away, being erect types. It is hoped that they would replace the local spreading variety in spite of its higher yield as it is difficult to be dug out.

Paddy.—For want of water in tanks winter paddy crop was a failure. But summer paddy was successfully raised on fields irrigated by wells. During the year a total quantity of 2,788 seers of paddy seeds were distributed from our Depots. Table III gives details of this and other seeds and setts supplied.

Sugar-cane.—H.M. 320 has become very popular and is now very widely grown almost replacing the other varieties. The growers have begun to get their supplies direct from among themselves. One lakh and sixty-eight thousand setts were supplied through the depots during the year.

Miscellaneous Crops.—Supply of seed cocoanuts was an important item of work in Tiptur Range. Four cocoanut gardens were chosen in all the three taluks of Tiptur, Gubbi and Chicknaikanhalli and some of the promising trees were selected in each garden and numbered, so as to keep a record of the parent trees. From these trees seed nuts were obtained and supplied to Babbur Farm (through the Botanical Section) to raise nursery from, for distribution in the Vani Vilas Sagara tract of Hiriyr.

In addition to the above about 1,200 bulk seed nuts were supplied to different people.

As a measure of relief against fodder scarcity a quantity of 982 pallas of Bili-jola was widely distributed as described and it proved a great success. It yielded corn as well as fodder and ryots have expressed great indebtedness to the Government for the supply. This is the most outstanding feature of work during the year under report.

Sixty-two pepper cuttings that were introduced into Madhugiri Range are reported to have come up well, as also six pepper layerings supplied to Chickballapur Range.

Remedial Measures.—As usual remedial measures against insect pests and fungoid diseases were adopted. The Agricultural Inspector, Tumkur, visited 20 areca gardens and rendered advice *re* preventive measures against 'Anabe Roga'. Diseased trees were felled down and burnt root and branch on the spot and the healthy ones were cared for by deep trenches being dug around the affected spots. In some cases liming was also done. At Honnavalli, Tiptur Taluk, the dusting of sulphur in varying doses was tried by the Mycological Section with satisfactory results. In Pavagada Taluk control measures against betel vine, mildew were demonstrated with successful results. Fumigation of stored paddy was done against pests. Spraying against *Epilachna* beetle and *Alternaria* on potato was widely demonstrated in Kolar District.

Village Panchayets and Co-operative Societies.—These local bodies as usual continued to take interest in co-operating with the development works of the Agricultural Department. During the year under report 71 Village Panchayets and six Co-operative Societies conducted business to the extent of Rs. 2,824-7-0 and Rs. 54-4-6 respectively in agricultural implements seeds and manures, *vide* Table IV.

District Boards.—The District Board of Tumkur was good enough to contribute a sum of Rs. 100 for agricultural development work, but it did not make it available for being operated upon. The Kolar District Board gave no grant at all as in the previous year.

Agricultural Depots.—Total realisations from transactions in several range depots are detailed below :—

Range				1932-33	1933-34	1934-35
				Rs. a. p.	Rs. a. p.	Rs. a. p.
Tumkur	..	..	..	907 2 1	446 1 2	1,443 2 11
Tiptur	..	..	..	1,402 10 6	666 2 1	1,354 9 2
Madhugiri	..	..	..	397 10 3	1,375 0 11	2,811 1 9
Kunigal	..	..	..	1,407 12 11	720 15 6	1,605 11 7
Kolar	..	..	..	1,586 11 4	1,083 12 5	2,704 6 10
Chikballapur	..	..	..	6,630 2 10	3,282 0 10	3,052 15 8
Chintamani	..	..	..	984 2 4	799 3 2	1,130 13 2
Goribidnur	..	..	..	2,064 10 4	3,159 9 0	1,197 1 4

Depots have become very popular and are serving very useful purposes.

Conclusion.— Thanks of the department are due to the Deputy Commissioners of Tumkur and Kolar Districts and other officers of the Revenue Department for their very kind and hearty co-operation, especially at the period of distress and to the non-official gentlemen and to officers of other departments for their co-operation and valuable assistance rendered to us in our work. The executive staff worked very cheerfully and diligently and rose to the occasion.

C. ELLAPPA CHETTY,
Offg. Senior Assistant Director.

TABLE I.—Demonstrations.

Ranges	Ploughing		Cultivating		Jaggery Boiling		Seed Selection		Miscellaneous				
	1932-33	1933-34	1934-35	1932-33	1933-34	1934-35	1932-33	1933-34	1934-35	1932-33	1933-34	1934-35	
Tumkur	19	15	26	4	6	5	8	1	5	4	6	8	20
Tiptur	4	43	26	2	24	15	..	4	2	..	13	16	212
Madhugiri	34	56	38	27	43	15	..	..	1	45	..	79	50
Kunigal	10	4	8	3	..	1	5	9	20	9	7	..	12
Kolar	28	35	6	18	4	..	7	10	11	5	3	10	..
Chickballapur	28	18	17	2	1	..	13	9	24	..	..	..	..
Chintamani	8	30	20	2	4	5	2	..	1	..	..	..	..
Gorbidnur	23	12	4	21	2	..	5	1	2	..	..	3	7
Total	154	213	145	79	84	41	40	34	66	63	29	116	301

TABLE II.—Sale of Implements.

Ranges	K.M. Ploughs		Eureka Ploughs		Mysore Ploughs		Mysore Patterns Ploughs		K.M. Patterns Ploughs		Meston Ploughs		Kritoskar Ploughs		Cultivators		Spare Parts			
	32-33	33-34	33-34	34-35	32-33	33-34	34-35	32-33	33-34	34-35	32-33	33-34	34-35	32-33	33-34	34-35	32-33	33-34	34-35	
Tumkur	1	1	4	..	1	..	..	3	1	2	2	4	..	..	3	3	1	50	61	28
Tiptur	14	2	6	2	1	..	..	1	..	4	1	..	..	..	7	2	1	129	119	61
Madhugiri	..	..	3	4	..	..	..	..	..	3	..	..	..	..	6	1	..	18	22	14
Kunigal	2	1	1	2	..	..	21	1	..	4	..	..	..	..	15	1	..	12	18	5
Kolar	6	48	8	8	..	..	4	8	2	20	16	..	..	..	3	1	..	65	127	34
Chickballapur	4	..	2	2	..	..	3	4	..	13	11	1	..	..	6	2	..	83	41	27
Chintamani	1	..	14	7	1	..	6	10	3	16	1	4	..	..	8	9	3	26	32	20
Gorbidnur	..	..	..	..	..	..	..	..	1	4	2	3	..	..	2	..	..	23	40	24
Total	30	51	38	25	2	4	34	27	7	66	33	15	9	..	50	19	5	406	480	213

Tumkur Circle.

TABLE III. Distribution of Improved Seeds.

Ranges	Paddy in seers		Ragi in seers		Groundnut in seers		Sugar-cane in setts	
	1932-33	1933-34	1934-35	1933-34	1934-35	1933-34	1934-35	1933-34
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Tumkur	3,558	943½	538	1,780	160	477	186	30,400
Tiptur	1,975½	2,320	263	1,537½	195	50	..	4,000
Madhugiri	6,419½	3,430	265	455	207	442½	..	80,500
Kunigal	1,200	400	370	1,260	411	50	..	13,516
Kolar	664	191½	825	2,042½	..	..	..	50,750
Chickballapur	1,875	1,141½	238	1,075	400	500	60	28,000
Chintamani	1,860½	542	386	1,429½	100	429	110	16,000
Goribidnur	2,100	355	186	1,258	750	100	12	7,500
Total	19,862½	9,323½	2,786	10,837½	1,853½	2,048½	368	1,78,516
								80,250
								1,68,000

TABLE IV.

Ranges	Village Panchayats				Co-operative Societies			
	1932-33	1933-34	1934-35	1933-34	1932-33	1933-34	1934-35	1933-34
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Tumkur	16	Rs. a. p. 334 11 8	5	Rs. a. p. 107 10 0	1	Rs. a. p. 32 0 0	1	Rs. a. p. 3 3 0
Tiptur	4	102 9 0	4	42 11 0	7	275 1 0	5	35 8 0
Madhugiri	9	345 2 0	9	788 12 0	35	2,000 0 0	1	3 14 0
Kunigal	31	742 12 7	3	60 10 0	..	..	..	..
Kolar	13	353 11 4	3	102 12 0	1	17 4 6	..	..
Chickballapur	42	5,307 8 9	15	1,438 3 9	3	270 9 9	1	63 2 0
Chintamani	23	812 1 3	17	570 0 3	4	508 10 0	5	317 3 9
Goribidnur	12	189 15 5	17	683 6 6	5	75 1 5	1	2 12 0
					1	1,357 0 3	3	108 14 0
Total	150	8,188 8 0	73	3,794 1 6	71	2,824 7 0	17	534 8 9
					21	2,438 1 2	6	54 4 6

Tumkur Circle.

**REPORT OF THE CENTRAL IMPLEMENT DEPOT, FOR THE
YEAR 1934-35.**

The working of the Central Implement Depot during the year under review has resulted in earning a gross profit of Rs. 1,729-8-0 and a net profit of Rs. 1,126 after setting apart of Rs. 226-12-1 as a reserve against bad debts and also meeting the incidental and other expenses, which amounted to Rs. 400.

The value of the implements sold during the year worked out to Rs. 24,622 as against Rs. 37,040 of the previous year. The fall of about Rs. 14,000 is due to the continued economic depression and also to the direct purchases made by the Mysore Sugar Company, Mandya, from the Central Industrial Workshop, Bangalore.

Implements worth Rs. 1,748 were sold on Hire Purchase System as against Rs. 308 of the previous year. The recoveries effected during the year from these purchasers amounted to Rs. 944 and the balance due from them stands at Rs. 3,518 on 30th June 1935.

Rs. 89-10-7 recovered from them as interest was paid into the Treasury for being credited to Agricultural Receipts.

Rs. 2,000 which represented the profit earned by the Depot during the year 1933-34 after setting apart about Rs. 800 as a reserve against bad debts was also remitted to the Treasury as Agricultural Receipts.

Out of Rs. 30,000 held by the Depot as working advance, Rs. 10,000 was refunded to the Treasury as sanctioned by Government in Order No. 4601—A. & E. 136-34-2, dated 21st January 1935 without impairing the normal working of the Depot. Government sanction to refund another Rs. 10,000 has been applied for.

The debts due to Depot under all accounts worked out to Rs. 10,441 at the end of June 1934 and this figure stood at Rs. 7,000 on 30th June 1935.

The services of the Chief Accountant were got extended upto end of September 1935. In addition to the usual work of the Depot and introduction of new system of accounts, he was able to inspect the accounts of Tumkur, Tiptur, Madhugiri and Kunigal Branch Depots. The inspection of other Depot accounts will be arranged for in the usual course.

The balance sheet and the profit and loss account of the Depot for the year 1934-35 are appended hereto.

B. NARASIMHA IYENGAR,
Director of Agriculture.

Trading and Profit and Loss Account of the Central Implement Depot for the year 1934-35.

	Rs.	a.	p.	Rs.	a.	p.	Rs.
1. Stock on hand as on 1st July 1934 ..	29,493	0	6	.....	.....	.....	20,857 3
Deduct centage added thereto ..	3,624	6	6	.....	.....	.....	2,017 1
2. Purchases during the year ..				25,868	10	0	1,747 8
3. To gross profits earned during the year ..				17,888	8	5	.....
				1,729	8	0	23,472 15 11
							2,608 1 9
				45,486	10	5	20,864 14 2
1. Cart hire and other incidental expenses ..				292	6	9	45,486 10 5
2. Interest recovered from H.P.S. debtors and payable to Government ..				84	5	2	1,729 8 0
3. Provision for bad debts ..				226	11	10	.....
4. Net profits payable to Government ..				0	0	3	1,729 8 0
Total ..				1,126	0	0	.....
				1,729	8	0	.....

Central Implement Depot.

Statement of Assets and Liabilities of the Central Implement Depot as on 30th June 1935.

Liabilities.		Rs.	a.	p.	Assets.		Rs.	a.	p.
1.	Advance from Government	..	..	..	(1) Closing stock on hand	..	23,472	15	11
	Less repaid as per G.O. No. 4601-A. & E.	..	..	..	Less 12½ per cent added on account of incidental expenses	..	2,608	1	9
	136-34-2, dated 21st January 1935	..	..	..		..	20,864	14	2
2.	Sundry Creditors.—				(2) Sundry debtors:—				
	(1) Messrs. Madhrai Mudaliar & Sons	..	1,307	8 8	Government Officers and Agricultural Farms	..	885	0	11
	(2) Kolar Mission Institute	..	915	12 6	Private individuals	..	550	15	10
	(3) Central Industrial Workshop	..	2,486	15 0	Co-operative Societies	..	773	8	6
	(4) Cooper Engineering Works	..	657	14 0	Village Panchayets	..	1,305	5	2
	(5) Kriloskar Brothers	..	687	6 0		..			
	(6) Syed Hussain	..	6	6 10	H.P.S. debtors	..	..	3,514	14 5
	(7) Tata Iron & Steel Co.	..	8	7 6		..	..	3,518	2 6
	(8) Agricultural Engineer	..	12	9 8		..	..	310	0 0
3.	Bad debts reserve.—				(3) Imprest amount held by Agricultural Inspectors	..	..	18	4 7
	As per previous balance sheet	..	1,514	7 9	(4) Cash on hand	..	..	25,776	8 7
	Bad debts written off during the year	..	83	4 3	Cash at Treasury	..	..	..	..
					Total	..	..	25,794	13 2
	Balance	..	1,431	3 6		..	..	54,002	12 3
	Provision made during the year out of profit earned	..	226	12 1		..	..	..	..
4.	Amounts payable to Government—					..	..	..	..
	(a) as net profit earned	..	1,126	0 0		..	..	..	..
	(b) as interest recovered from H.P.S. debtors	..	84	5 2		..	..	..	..
5.	Excess assets over liabilities	..	..	..		..	..	..	..
		..	1,210	5 2		..	..	..	..
		..	25,051	7 4		..	..	..	..
	Total	..	25,057	12 3		..	..	..	..

Central Implement Depot.